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FASTEST TRAINS POWERED BY GM DIESELS

GENERAL MOTORS-powered passenger trains again made the fastest* "start-to-stop" scheduled runs in the United States last year, increasing their already predominant hold on the railroad records of this country.

Figures compiled by the authoritative trade paper, "Diesel Railway Traction," show that there were seven start-to-stop scheduled runs at speeds over 80 miles per hour, all made with

General Motors Diesels, and that out of the 55 fastest runs in America, 52 are handled by General Motors locomotives. The three remaining runs are steam.

High speed is, of course, only one point in the supremacy of the General Motors passenger locomotives. More important is the locomotive's ability to maintain sustained speed over

long distances and do it with unparalleled passenger comfort and safety, plus on-time performance unmatched by any other form of travel, all with outstanding economy of operation and maintenance.

*The country's fastest scheduled runs are those of the northbound Burlington twin Zephyrs which make the 54.6 miles from East Dubuque, Illinois to Prairie Du Chien, Wisconsin in 39 minutes, a start-to-stop rate of 84.0 miles per hour, behind a General Motors Diesel.

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*See Page 50, December 13, 1947 issue of
RAILWAY AGE.

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RAILWAY AGE

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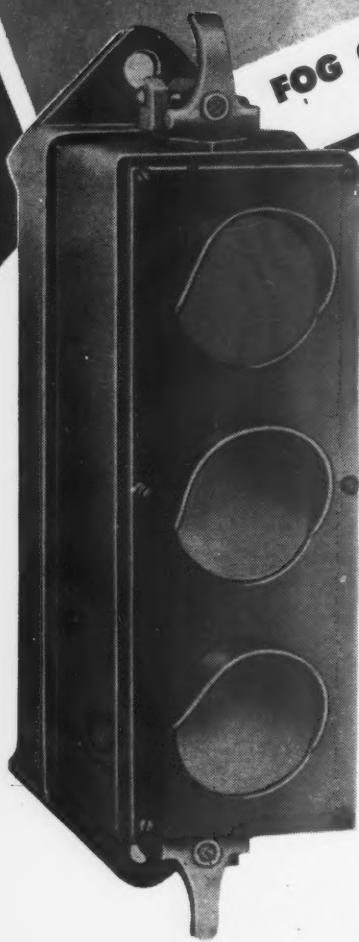
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WEEK AT A GLANCE

BEYOND THE BOOK VALUE: One way to measure the value of a railroad's maintenance department's mechanical equipment is to add up the depreciated investment in that equipment. Another way—and the Pennsylvania's S. R. Hersh develops the logic behind it in an article in this issue—is to evaluate the equipment's ability to produce more work and better work per unit of expense, to make their jobs safer for the men in the maintenance forces, and to lighten the physical burden of labor while increasing each man's effectiveness. And it is the supervisor's responsibility to plan the most effective use of that equipment, so that the potential values may be fully realized.

BLIND EYE: The Mediation Board has submitted its annual appraisal of its accomplishments, and finds them good (page 55). Hailing settlement of the T. P. & W. strike, the board would pin all the blame on the late George P. McNear, without bringing up the fact that, when the management declined arbitration, the board failed to report that an "emergency" existed, a step necessary to exhaust the procedures of the Railway Labor Act. Last year, of course, when a brotherhood leader would have nothing to do with arbitration, the board looked at the matter in a slightly different light.

OVER-OPTIMISTIC?: Cheerful reading makes for satisfaction with things as they are, and our leading editorial suggests that perhaps railroad publicity has been somewhat too cheerful of late for the industry's own good. The railroads' economic position is not secure, and it will not be secure until their credit is restored to the highest level. It isn't likely to be restored until the public understands why, in the public's interest (not merely the railroads'), that must be done. And the public isn't in any great danger of finding that out unless the railroads hammer home the truth.

SIGNALING SAMPLE-ROOM: A working exhibit of full-size signaling equipment has been set up at its Swissvale plant by Union Switch & Signal to serve a dual purpose. First, this collection of apparatus is available for convenient demonstration to railroad executives and purchasing and signal officers to help them in planning installations and in keeping up with recent advances in the field. Second, it affords a particularly effective means for training men on the manufacturer's staff in the construction and functions of its products. The complete and instructive arrangement of exhibits is suggested by the picture-story on page 40 herein.

THE GREATER GUILT: Apparently determined to uphold the Railroad Adjustment Board's remarkable reputation for producing fantastic decisions, a referee recently has decided that, when he finds trainmen guilty of serious violations of operating rules, the appropriate punishment is to put the men back at work in the jobs in which they

exhibited their lack of trustworthiness. This dangerous usurpation of managerial responsibility is the subject of editorial comment this week. The lack of discipline and of devotion to duty that this unrealistic decision condones and encourages inevitably will result in disaster if it is not promptly reversed—and it is fair to inquire on whose shoulders the ultimate burden of blame should rest when that disaster occurs.

DIMINISHING DAMAGE: The Pennsylvania's profitable experience with mechanized materials handling as a means of reducing loss and damage already has been referred to in these pages. In this issue the views of that road's manager of stations and motor service, J. L. Webb, are set forth in an article based on his address at the recent Cleveland Conference on Materials Handling. Not only is the equipment itself profitable in reducing claims through reduced handling, it also has the definite additional advantage, Mr. Webb finds, of improving employee morale—that is, employee interest in doing the job right.

COMMUNICATIONS CRUX: A fourth of the American people think our existing social, political and economic system ought to be changed, generally in the direction of more government controls and less individual liberty. Two-thirds of the general public believe that big business regularly makes big profits, 20 per cent or more. Whose fault is it that these ideas prevail so widely? The fault, according to one leader of industry, is with management, specifically with inadequate communications between the human beings who make up management and the human beings who make up those groups designated as "labor" and as "consumers." This idea was developed last week in a provocative and frank address by the president of General Foods at the annual dinner of the New York Traffic Club. The substance of this discussion of a pressing challenge to American management forms an article in this issue (page 44).

MOVING THE CARS: What one single-track division of 692 miles has accomplished in the way of improving performance is reported in one of this issue's illustrated articles (page 56). The division involved is part of the Central of Georgia; it includes lines extending in four directions from Columbus, Ga.

WHAT IS LIGHT WORTH? A further discussion appears in this issue, in an article by H. L. Logan of the Holophane Company, of the question raised in our editorial columns last December, "What is the dollar value of light?" Considering the conditions that would prevail if no artificial lighting whatever were available, the argument is advanced that industrial production would drop at least 50 per cent without the aid of some supplement to daylight. When it comes to measuring the dollar value of various degrees and qualities of artificial lighting there is considerable evidence, too, our contributor shows.

"Standard"

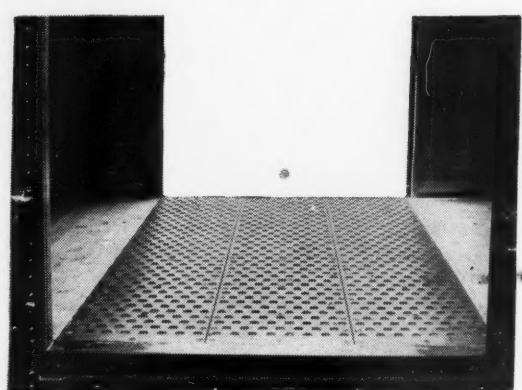


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THE PUBLIC'S SELFISH INTEREST IN LARGER RAILWAY EARNINGS

The railroads cannot operate without labor, and neither can they operate without capital—which gives labor the tools and machines to work with. There are other motives, doubtless, besides the wages paid which induce people to *work* for the railroads—such incentives as interest in the work, habit, sentiment and so forth. But these motives do not operate to induce people to *invest* in the railroad business. The only motive that can be brought to bear to induce capital to enter railroading is a favorable impression by investors of the probable safety of their principal and the likelihood of a satisfactory return, as compared to the investment opportunity afforded them by other industries.

What Concerns the Public

The very heart of the "railroad problem" is the fact that—except for the special case of equipment financing—no new money of any consequence from private investors has come into the railroad business for 15 years. Railroad improvements, aside from equipment, have for that entire period been limited to those provided by the reinvestment of earnings. And, with railroad credit unsatisfactory, managements have used earnings, such as they have been, to a large extent to retire fixed-interest obligations. The contention of some people—that the railroads can finance themselves adequately from

earnings and that it is not necessary for them to have good credit in order to have access to ample new capital—is not borne out by experience.

The public has no very lively interest in what rate of return is "fair" for the railroads. It *does* have a definite concern about the adequacy and modernity of railroad facilities. Quite likely, if the railroads' desire for larger earnings were translated to the public in terms of the public's demand for constantly improving standards of service, the public would develop a more active interest in helping the railroads to get better earnings.

The railroads constantly point to their records of service to impress upon the public how satisfactory their performance is. The impression so created is supplemented by statements of individual companies, wherein many of them convey the opinion that they are doing pretty well financially. The resulting general public opinion that, on the whole, the railroads are thriving reasonably well, is certainly not accurate; and it is bound to have the effect of impressing the public with the belief that, from the standpoint of *their*—the public's—interest, there is not much in the railroad situation for them to worry about.

This is not the frame of mind required to secure public support for a program of restoring railroad earnings and new investment to a dependably adequate level. The fact is that the railroads' service

record is good only when consideration is given to the inadequacy for many years of railroad earnings, and the consequent shortage of railroad facilities. No railroad is actually prospering financially—in comparison to what its investors would be earning in almost any other business.

Mr. Henry Kaiser, aside from his recent disagreement with his financiers, does not seem to have had any trouble raising all the investment money he needs to enable him to manufacture his streamlined automobiles in large quantity. Just contrast the ease with which he has secured investment capital with the problem a railroad would run up against if, say, it should want to reconstruct 1,000 miles of main line into a thoroughly modern railroad, 1948 model. Where would it get any such money? The answer, with possibly one or two exceptions, is that it would not get it. But does not the public interest require the services of thousands and thousands of miles of completely modern railroads, equally as much as it needs the services of Mr. Kaiser's automobiles?

A Different Approach

The system of private enterprise is functioning successfully in Mr. Kaiser's case, enabling him to provide the public with what it wants—but it is not functioning to give the public the kind of railroad service it wants, because the essential "profit" ingredient, which is present in Mr. Kaiser's case, is largely absent in that of the railroads. An adequate capital supply for railroad improvements could be secured for the railroads as it has been for Mr. Kaiser by allowing them, as he is allowed, to charge prices which are consonant with their costs; and also by refraining to use government money to compete with the railroads, as government money abstains from competing with the business of making automobiles.

Nobody likes to sing the blues all the time, and the public certainly does not like to hear such tunes from leaders of industry. Nevertheless, too much optimism in railroad publicity—whatever its justification from the short-run view—is making no contribution toward correcting the fundamental difficulties which have kept railroad stocks below par for 17 years, and below the average of industrial stocks since the early 1920's. Perhaps, instead of asking for what is "fair," while insisting that railroad service is, on the whole, pretty good despite poor earnings, a more effective approach might be: (1) to outline in some descriptive detail the kind of thoroughly modern service the railroads would offer if they had the money; (2) to present careful estimates of the annual earnings needed to sustain the expenditures required for such modernization; and (3) then to appeal to the public's own self-interest to support the several measures needed to provide such earnings and such improvements.

GUILTY—SO WHAT?

On a railroad in the South a rear flagman was discharged for failure to detect that a car up in the middle of his train was derailed. The train moved along for about three-quarters of a mile beyond the point of the derailment; the locomotive then was stopped for water. Rule 99 required the flagman to protect the rear of the train. If he had done so, he would have noticed that the derailed truck had plowed a deep furrow between the rails, completely shattering many ties. After the locomotive had taken water, the train proceeded more than a mile further before the derailment was discovered—and the head end, not the rear, did the discovering even then. In its crippled condition, the train had successfully negotiated a trestle—and, of course, it was pretty nearly a miracle that a derailed car was moved for almost two miles in the middle of a train, without causing a serious pile-up.

On another railroad—a western one this time—a train pulled into the clear for the purpose of permitting a switching crew to classify the cars that it had picked up en route. The rear brakeman of the train was given the list of cars to be switched and instructed to hand it to the switching crew. The trainmaster and the assistant superintendent went to the caboose, looking for this list, and found that the brakeman who had been instructed to give the list to the switching crew was asleep on duty. Aside from his instructions to hand over this switching list, the brakeman had also fallen afoul of the company's rule requiring that "freight brakemen must assist conductor in making all required inspections and tests—at terminal and convenient points along the road." Since this employee was engaged to perform these services and, instead, went to sleep, the company severed his connection with the payroll.

Both of these trainmen made claims to the National Railroad Adjustment Board for reinstatement in the jobs from which they had been dismissed, and also for compensation for the time they had been out of service. Since the members of the Adjustment Board were not able to agree on the disposition of these cases, they were passed along to Referee Thomas F. Gallagher, who agreed that both of the men were guilty of the infractions as charged. He ruled, nevertheless, that both of them should be reinstated—although without compensation for time lost.

These cases were called to our attention by an officer of a railroad not immediately involved in either case, but one who has a lively interest in the maintenance of safety and efficient standards of performance in occupations where inattentiveness to duty may at any time involve large loss of lives and property. The referees who require the reinstatement of negligent employees take a heavy load

of moral responsibility upon their shoulders when, with no direct connection with the safety train operation, they nevertheless undertake to substitute their own judgment of who is a competent employee for that of the railroad officers who would be called to account if employees, demonstrably inattentive, should fail to mend their ways.

As Professor Sumner H. Slichter has observed, some of the decisions of this Adjustment Board are "among the strangest in the annals of industrial relations." Referee Gallagher, apparently, is determined to carry on this tradition.

DIESEL FAILURES

A comparison of the performance records of Diesel-electric locomotives on several railroads shows that considerable differences exist in the mileage per locomotive failure on these roads. In discussing this situation with mechanical department men it becomes evident that the basic reason for these differences is the manner in which the recommended maintenance instructions of the locomotive builders are followed. The best records are made by those railroads that adhere religiously to the recommended practices, with some slight modifications to meet the conditions peculiar to the individual railroads.

As no responsible mechanical-department officer would be willfully negligent in maintaining equipment under his supervision, it is interesting to find out why any railroad should neglect these motive power units. A primary cause can be found in the

reluctance of operating departments to give the mechanical department the time required for adequate maintenance. This situation is particularly true on those railroads that cannot dovetail the operating assignments with the maintenance requirements without sacrificing either tonnage ratings, train schedules or advertised service when steam power is substituted. Spare Diesels are non-existent. Thus, the operating advantages of Diesel-electric power are its own worst enemies in respect to the attention it gets.

Some railroads are fortunate enough to have operating conditions that fit in nicely with the maintenance schedules. Passenger Diesels on one such road where this type of power is relatively new have made approximately two million miles with only one failure, a delay of approximately 15 minutes. This road follows the maintenance instructions of the builder.

Other railroads are making records equally as good or better, even though train operations are not as favorable. Experience has demonstrated to them the value of giving the Diesel-electric locomotives the attention they require. They make every effort to have the units ready for their assigned runs, but the mechanical departments have control of the locomotive dispatching. A locomotive is not released for service unless it is ready to go.

Like any precision-built machinery, the Diesel-electric will perform best when it is given good care at regular intervals. It has moving parts that wear, and electrical parts that deteriorate gradually under normal operation and rapidly when misused, which happens frequently. It requires periodic attention. Without such attention failures are inevitable.

WHOSE FAULT IS IT THAT "FREE ENTERPRISE" IS MISUNDERSTOOD?

"Our American way of life provides each individual an opportunity to go as far and climb as high as his willingness to work, his skill, ingenuity and integrity will carry him.

"Our American way of life recognizes that the individual has the right to work when and where he wishes, the right to worship as he pleases, to speak his mind on any subject, to meet with his fellow men for any peaceful purpose, to be secure in his possessions, and to have his day in a free court. It also recognizes that the individual is superior to the State, that our public officials are servants of the people and that they derive their just powers from the consent of the people.

"These things taken together created an atmosphere of freedom and an economic climate which made possible in the United States the greatest production and diffusion of wealth in the history of the world, and the establishment, for even the lowest paid worker, of the highest standard of living the world has ever known. . . .

"Not nearly enough of the American people know and understand the basic facts of life concerning our free enterprise economy. Whose fault is this? The blame rests right squarely on the shoulders of the business men of the country, large, medium-sized and small.

"Every business man knows what freedom of enterprise

means to him, but how many have seen to it that those on their payrolls know what freedom of enterprise means to them? Not very many, notwithstanding the fact that it's just as important, if not more important, to sell the system which makes possible the production and distribution of goods and services than it is to sell the goods and services themselves. We've thrown the baby out with the bath water, and, quite naturally, most of us place the blame on everything and everybody except ourselves, the real culprits.

"Every business man knows that his judgment is no better than his information. But altogether too many of us have entirely overlooked the fact that exactly the same thing is true of a factory worker, a truck driver or a machinist. If his information is wrong, his judgment cannot possibly be right. As someone said, 'Give the folks the facts and our country will be saved.'

"Fortunately, this condition can be, and, to some extent, is being remedied. More and more companies are publishing and distributing simplified financial statements to their employees. More and more companies are devoting part of their magazine and newspaper advertising to an explanation of what makes our economy tick. This is all helpful, but the effort will have to be expanded at least one hundred fold in order to do a comprehensive job."

—DeWitt Emery, president of the National Small Business Men's Association, in an address at Washington, D. C.

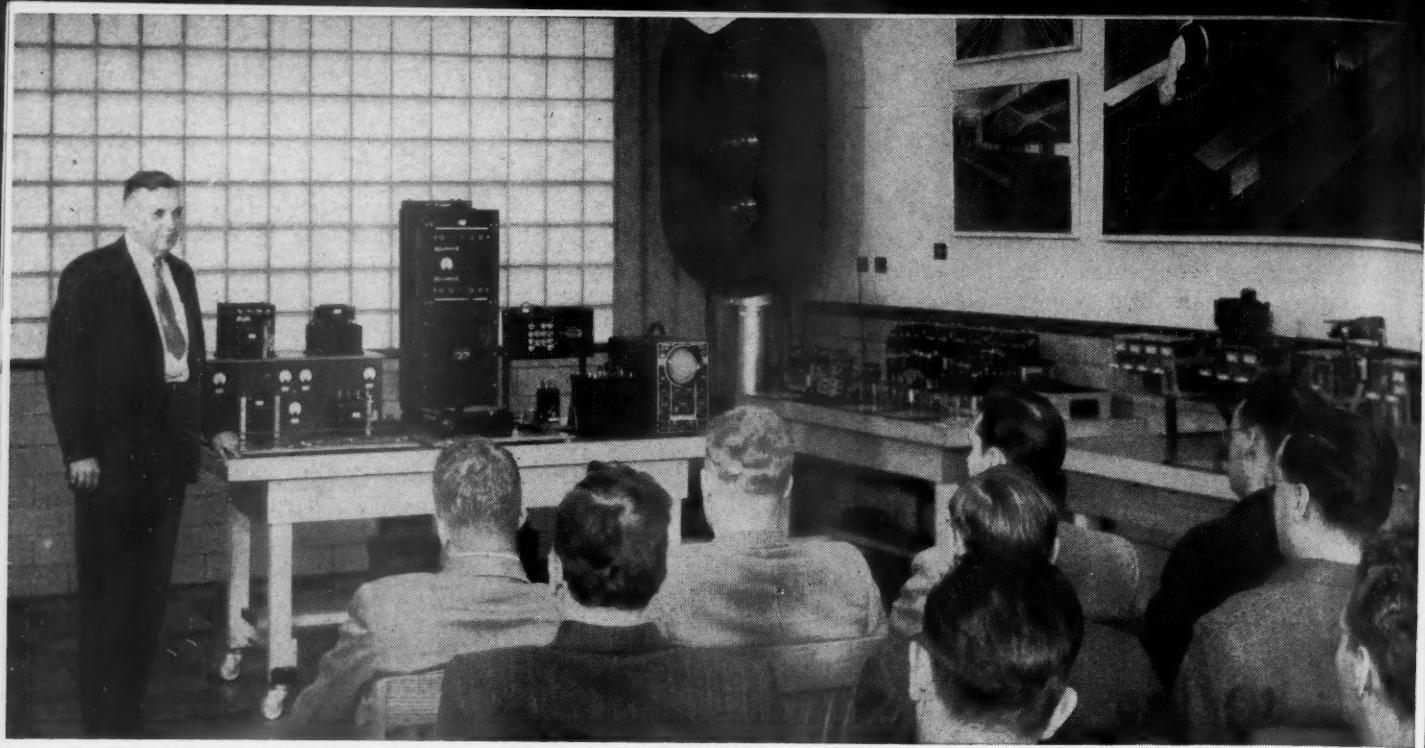


Fig. 1

EDUCATIONAL EXHIBIT OF SIGNALING

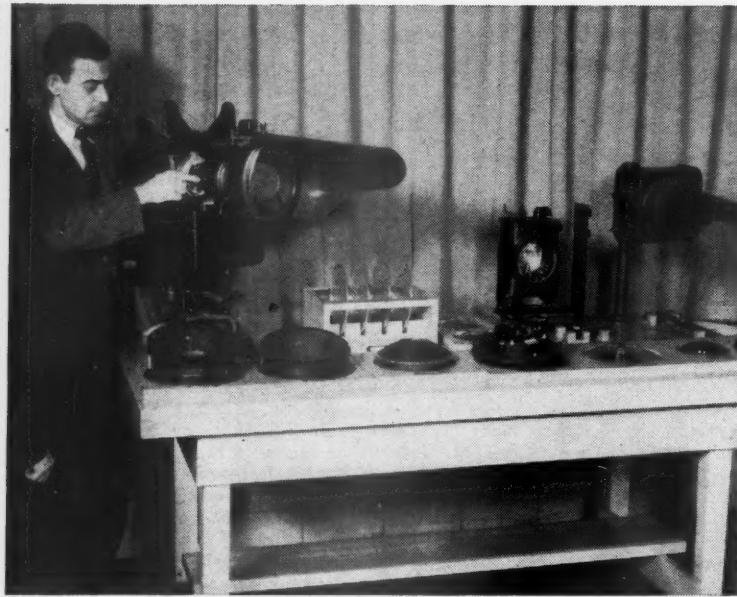
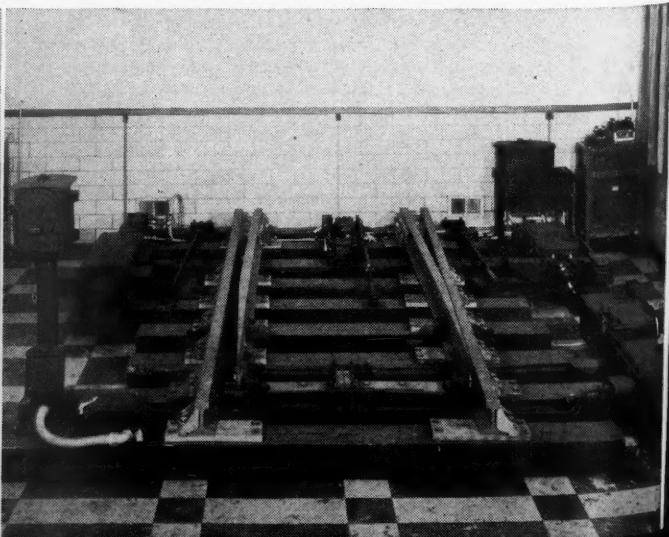
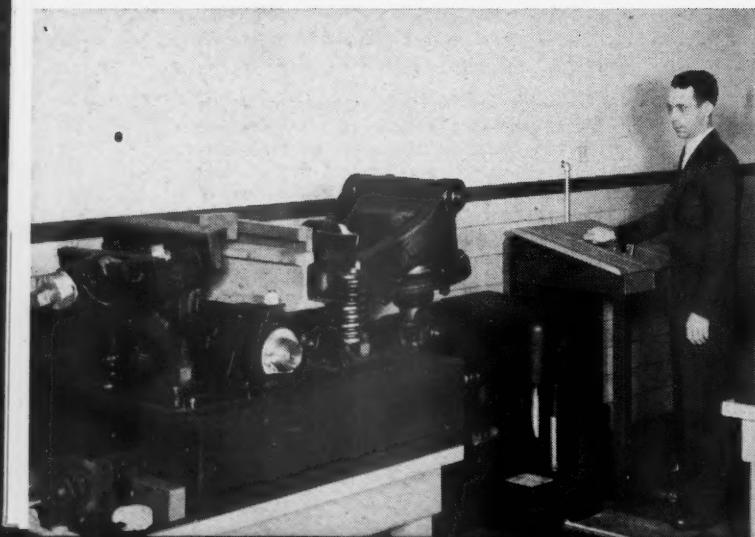


Fig. 2 above—Fig. 3 below

The Union Switch & Signal Co. has established at its Swissvale, Pa., shops an extensive "live" exhibit of signaling equipment, all of which is connected to control circuits and power supplies for operation as in actual railroad service. It was provided primarily to be of benefit to railroad executives, operating officers, signal engineers, craftsmen and students, although it is also used effectively for training the company's own personnel. Previously, when railroad representatives were at the plant for the purpose of planning signaling projects, it was necessary to go through various production departments to inspect the apparatus under consideration. Now they can not only see the apparatus in the exhibit room but also watch it operate.

Heavy apparatus, such as switch machines and car retarders, is located permanently in one section of the room. For example, a standard track switch, using 131-lb. rail on regular railroad ties, is operated by a dual-control electric switch machine under the control of levers which, in effect, are the same as used in

Fig. 4



modern interlockings or in centralized traffic control. The switch exhibit also includes two types of electro-pneumatic switch machines, roller-bearings under the switch points, a swivel front rod, and two types of electric locks as used on hand-throw switches.

A second installation includes a complete electro-pneumatic car retarder unit, a direct-acting switch machine and a skate machine, all of which can be operated under the control of levers as in a classification yard. Other full-sized permanent exhibits include color-light signals, short-arm crossing gate and flashing-light signals.

Portable Exhibits

Numerous other exhibits are mounted on tables with casters so they can be moved to positions most readily viewed by groups or individuals when seated—chairs being provided for 60 persons. These portable displays include such systems as cab signaling, train communication and centralized traffic control, which can be operated as in actual railroad service. The operation of the searchlight signal, otherwise known as the "one-eye," can be understood by watching the action of a signal, a portion of which has been cut away to permit a view of the inner lenses and operating mechanism.

Another portable exhibit includes a complete arrangement of the actual relays and circuits used at signal locations in a system of coded track circuits, in which no line wires are required. These exhibits include actual track circuits on miniature tracks on which miniature trains are run to demonstrate the operation of the signaling.

The exhibit also includes a projection booth equipped for sound motion pictures and slides.

Fig. 1: G. W. Boughman, chief engineer of the Union Switch & Signal Co., using some of the portable exhibits while instructing a class of students

Fig. 2: A cut-away searchlight signal is used to explain the operation of the mechanism. This exhibit also includes various lenses, prisms and cover glasses

Fig. 3: A complete unit of an electro-pneumatic car retarder, including a section of rail, can be operated to demonstrate actual service in a classification yard

Fig. 4: This switch exhibit includes three types of power switch machines, two kinds of electric locks for hand-throw switches and roller bearings on the switch points

Fig. 5: This exhibit includes all the component parts of inductive-type train communication equipment as used on either a locomotive or a caboose

Fig. 6: An operating exhibit of the apparatus required for the installation of continuously controlled cab signaling on a locomotive

Fig. 7: This exhibit demonstrates the relays, circuits and actual operation of automatic block signaling controlled by coded track circuits without the use of line wires

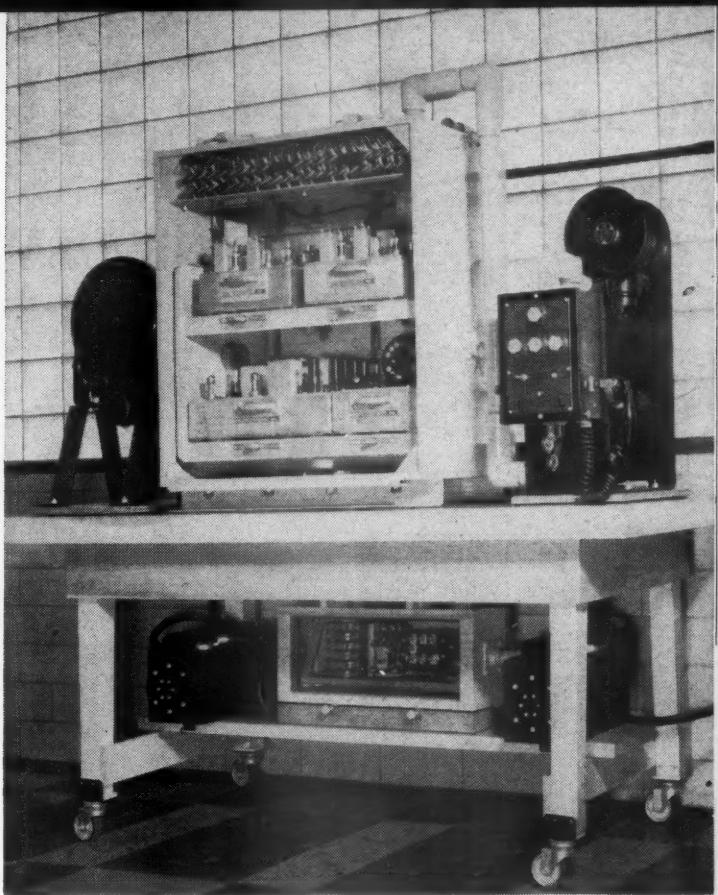


Fig. 5

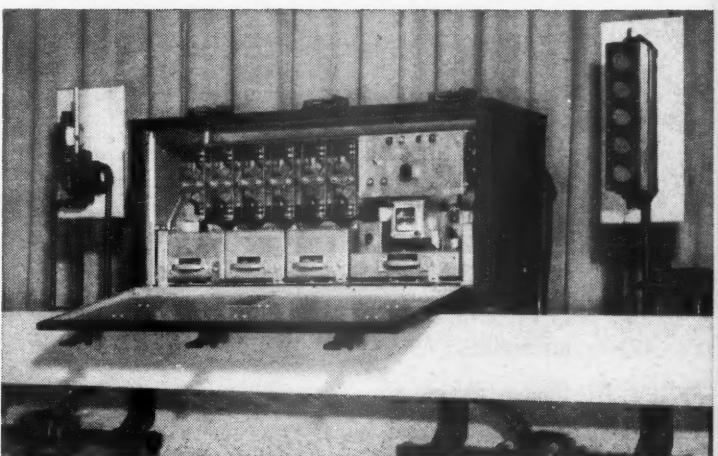
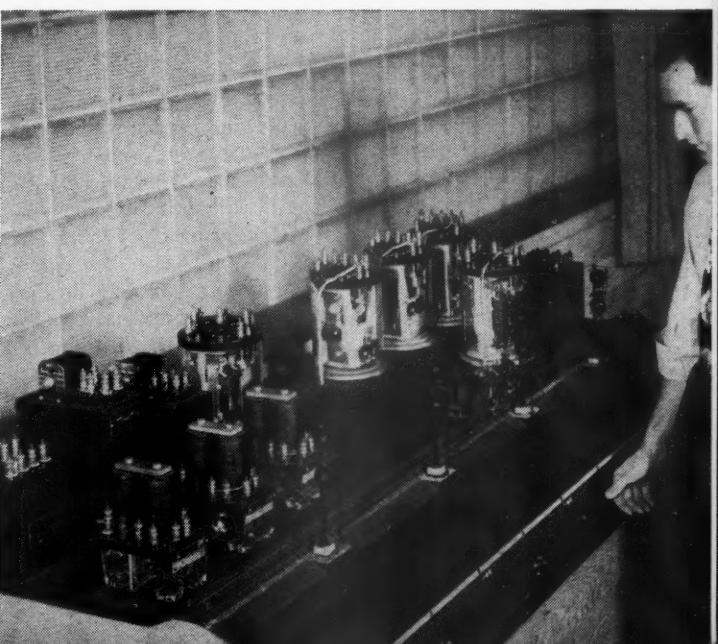


Fig. 6 above—Fig. 7 below



LOSS AND DAMAGE PREVENTION THROUGH IMPROVED MATERIALS HANDLING

By J. L. WEBB
Manager of Stations and Motor Service
Pennsylvania

The railroads of this country spent \$91 million in the year 1946 in payment of claims for loss and damage to freight, and in 1947 that figure will be between \$115 and \$120 million.

What similar figures for industry are, I do not know, but I do know that compensation to shippers in these amounts for losses incurred in transportation of their traffic was only for out-of-pocket loss for manufacture and that they failed to receive the profits they should have received from the sale of their products. Many times shippers were caused inconvenience, interference with production and increased labor expense for which the transportation agency cannot pay and which spells "lack of service." As service is all a transportation agency has to sell, it is easy to see why correction of any cause for the situation is important from the viewpoint of public relations as well as economic results. I can safely say that both transportation agencies and shippers are seeking the answer to prevention of loss and damage.

Manual Handling-Damage

The answer to this question is simple. It can be stated in two words—*reduce rehandling*. Unfortunately, the way to accomplish this is not as clear as the end itself, but I want to emphasize that when rehandling is reduced loss and damage are reduced, as are other direct expenses, so that there is, in both transportation and industry, much more to be gained by a reduction of loss and damage than is represented by the value of what we break and lose.

I am a salesman of transportation, not of materials handling equipment, but I am enthusiastic about the possibilities of materials handling equipment, and that enthusiasm comes from experience.

During the last war, because of heavy concentration of export traffic awaiting steamships, it became necessary to increase the capacity of export piers or get additional piers, which simply were not available. The railroads met this problem by purchasing stacking equipment and pallets. Stowing on the piers, which formerly was man-high, moved up to the rafters with 100 per cent increase in utilization of pier space. Box cars were released for additional loads. Freight was handled more quickly and with very little damage.

Let's talk a little about this rehandling business. Packages will always require some manual handling. Every time a package is manually handled, there is an opportunity for loss and damage, and if this situation

is met by installing equipment to reduce the number of handlings the effect is the elimination of some of the possibilities for manually caused loss and damage.

Probably everyone has seen a dissatisfied, stone-kicking boy, on his way to do an unpleasant task. How often do our men express to a package the anger that they want to take out on someone else? Every time a package is manually rehandled, there is an opportunity for damage. If our employees set packages down more heavily than they should, let them drop, kick them into place, throw them when they should be carried, something may happen. Whether it was intent or carelessness doesn't matter. The result is just the same—the shipper suffers losses and so do the transportation agencies; and usually no one knows what happened to the contents of the package.

Theft Chances Lessened

I am not talking of damage alone, but also talking of loss, and by loss I mean, principally, theft. It is easier for a man with a hand truck to go unnoticed into a secluded corner of warehouses and stations and cars and break open a package than it is when he is using a piece of modern freight handling equipment. Hand trucks are everywhere, everybody knows about them and nobody pays much attention to them, but everybody, including the freight handlers themselves, take pride in mechanical equipment and glance at it when they pass it. A glance may save a theft.

Of course, loss is not always theft from package. Due to loading errors we have freight go astray. Reduce the number of truck loads and the chances of freight going astray will decrease.

Morale is the answer to many of our prayers. Materials handling equipment spells progress in any organization, and progress aids morale. If you have never worked in a warehouse or on a freight station platform, you may not realize the self-elation that comes to every man in the operation when the company ("they", as it is commonly expressed) places devices on the platform to facilitate the operation and thereby recognizes its importance. I will venture a guess that there isn't one installation made that isn't talked over at many supper tables that night and I will always believe that the men like to be connected with progress. True, they know that there are two reasons for such installations—to handle volume and to reduce expense. Maybe they always hope it is the former, but the fact remains there has been little opposition to the installation of mechanical equipment.

It is astonishing to observe the simplicity and the economies, aside from prevention of loss and damage,

This article is based on an address at the Conference on Materials Handling at Cleveland, Ohio, on January 15.

that improved materials handling brings about. It may be unfair to discuss any one piece of equipment of the many that have so materially changed the handling of freight on the railroad, but time prevents comment on all. We now have a piece of equipment that takes the place of the hand truck and where freight is being moved for long distances—and this could be a warehouse just as well as a station—this one device, a flat, three-wheel platform truck with a small engine added, moves the freight in half the time that it formerly took to move it by hand truck, and with far less hazard from loss or damage. The benefits are simply this—a freight handler is saved for each truck installed.

I also feel that I should comment on the value of lift trucks and pallets in almost any form of operation. As applied to railroad work where these installations have been made, after the freight is placed on the pallet, usually at the car, it is never again handled manually on the station platform. While all this mechanized equipment is valuable it is important also to determine the right kind of equipment. Perhaps the experience of the railroad by which I am employed may be of interest.

We use at stations somewhere on our railroad every type of modern equipment that has been devised, ranging from the two-wheel hand truck, now modernized with roller bearings and rubber tires, to the heavy type of power crane trucks with booms. When we began to improve our handling equipment, we supplied our principal agencies and our supervision with a booklet in which were pictured every type, but not every make, of equipment which we had or knew through contacts with representatives of the materials handling equipment builders. As a new type comes on the market, we test it out and, if successful, we include it in our booklet. We much prefer to have our local supervisors request the type and make of equipment that they believe will bring about the desired loss or damage prevention or another form of reduction in operating expenses—first, because it leaves the job of selling with the manufacturer and, second, because when local supervision selects the equipment, it carries with it a responsibility to make it work.

Of course, every suggestion is carefully reviewed to determine the fitness of the type of equipment to the problem to be solved, because if equipment is furnished that is not suitable the desired results are not obtained and the blame may be placed on the equipment instead of defective planning. Generally speaking it is to the interest of neither manufacturer nor user to sell or be sold equipment unsuited for the purpose.

The railroads, as a whole, working through both the Association of American Railroads and each railroad's prevention organization, are trying hard to solve the loss and damage problem.

Special L.C.L. Cars

On our railroad, box cars specially equipped for handling l.c.l. shipments have proved very successful. Our use of steel containers, in which little damage occurs, indicated that by cutting down the space within which freight may shift damage possibilities are reduced.

We first made a check of 4,600 l.c.l. cars arriving

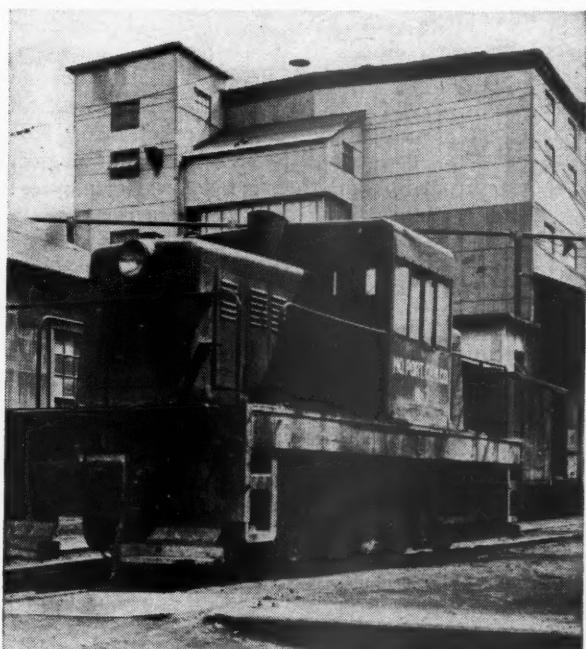
at our stations in one week to determine what caused damage. We found that it was caused by end-to-end shifting of the load and by crushing produced by the up-and-down movement of the car in movement over the road. With damage in box cars and not in container cars, it was evident that if we could apply the same factor that worked so well in the container cars to our box car movement, we might have something.

After a series of tests with various devices, we found a car that operated with practically no damage. What there was was due to human failures, for no matter what the equipment is, if heavy freight is loaded on top of light freight it will cause damage. This car, which has now been made standard on our railroad, all other types of experimental equipment being retired, is equipped with a series of upper and lower gates, of the barnyard type, which close and make, in effect, the same series of compartments that we have in steel containers when loaded on a car. This stops the end-to-end shifting. To stop the crushing damage from the up-and-down movement of the car, we placed a swinging shelf on the top of the lower gate. When the lower section of the car is loaded the shelves are swung from one gate to the other to form a second deck, dividing the load and stopping the crushing damage.

These cars are 60 ft. in length, operate in less car-load service, and they have taken a load of over 100,000 lb. without damage.

In addition to cars specially equipped, the principle of dividing and securing loads to stop end-to-end shifting of lading is pretty well in vogue over the railroads of the country. It stops the shifting and reduces but does not stop crushing.

The railroads are by no means idle in their efforts to prevent that part of damage which they alone can stop.



This Porter switching locomotive, owned by the Missouri Portland Cement Co. of St. Louis, Mo., is powered by two Model HB1-600 Cummins Diesel engines; it recently completed 25,000 hours of heavy service without an overhaul

THE CHALLENGE TO AMERICAN MANAGEMENT

By neglecting human relations, management is on the defensive, with one American in four favoring basic social change and two employees in five believing they would fare as well or better under socialism

By **AUSTIN S. IGLEHEART**
President, General Foods Corporation

I am asked to discuss the challenge to management. Some may say: *What challenge?* Haven't we met the challenge? Haven't we built the industrial machine that won a war and provided the highest living standard in history? Don't Americans—7 per cent of the world's population—own 70 per cent of the world's automobiles, 34 per cent of the railroads, 50 per cent of the telephones? Yes, we are tops, technologically. And yet, when we discuss the virtues of our system, we feel we have to defend it. Why are we on the defensive? We are operating in an atmosphere that is partially hostile and largely indifferent to our own accomplishments. Consider the public opinion polls. Perhaps they err in judging elections when a small percentage may tell the tale. But they can evaluate clean-cut trends with satisfactory accuracy. This is what the Opinion Research Corporation tells us:

Twenty-four per cent of the American people as a whole lean definitely toward some drastic, fundamental change in our social, political, and economic system. This does not necessarily mean red communism, but it includes communism and a number of other tendencies which would have the same final effect on economic enterprise and political freedom. That is an uncomfortably large number of people—some 35 million—to have on the wrong side of the fence. Moreover, an even higher percentage of manual workers leans leftward than does the general public. The Psychological Corporation put this question to industrial employees: "If all the manufacturing companies were run entirely by the government, would you get more for your money than under the present system?" Forty-three per cent said either "more" or "as much."

A Human-Relations Question

Those figures certainly present a challenge. What is the answer? Suppose every one of our 75,000 avowed communists were locked up or deported tomorrow. We would still have some 35 million neighbors who are known to be receptive to some form of basic change. Here stands our great economic machine capable of pouring out production and wealth. But if somebody smashes the "generator"—freedom of economic choice—or cuts off the "fuels"—competition and profit—what then of our liberties? What then of our living stand-

This article is an adaptation of an address by Mr. Igleheart at the annual dinner of the Trafic Club of New York on February 21. Prior to his talk, a recording on the public address system transmitted some of the actual public statements of American people against business management—"profiteers," "war-mongers," "imperialists," and other similar language.

ards? What then, for that matter, of management itself?

We have good reasons for action. For the sake of our country, for the sake of the world, for the sake of our children, and for the sake of our own skins, too—to be cold-blooded about it—let us approach this problem as a management problem. There is a specialty called *human relations* which it is plain we have not mastered.

What then? *We take four steps:* (1) Having defined the problem, we determine its causes. (2) We find out what needs to be done. (3) We learn how to do it. (4) And we do it. Our search for causes is most important. If we go astray here, nothing but futility can attend our execution of the remaining steps.

How, for example, do we assess the flood of anti-management statements which pelt the public ear incessantly from the left? The communist press has a tiny circulation but some of its strongest "lines" are echoed by certain labor publications and "liberal" organs and by political personalities whose voices reach millions. Their foremost targets are "big business" and "profits." This, on examination, appears to mean practically any enterprise bigger than a peanut stand and practically any part of a company's income that is not paid directly into a welfare fund.

Evidence of Failure

I think we may as well be realistic and admit that labor strife has always flourished—and still flourishes—in the soil of management indifference to the simplest principles of good personnel administration. We find one cause of our problem in the attacks leveled against management by a small number of outright radicals and a larger number of intentional or unintentional "catspaws." But is that the *only cause*? The Opinion Research Corporation has found that: *Two-thirds of the general public believes that industrial profits average about 20 per cent on sales. Industrial employees believe they are 25 per cent.*

We know that industrial profits are averaging about 5.1 per cent of sales after taxes. The worker doesn't know that. Why should he? Probed at another point, workers express belief that management gets 75 cents of the company dollar available for wages and salaries and that labor gets only 25 cents. We know that 87 cents goes to workers and only 13 cents to owners and managers. But how can the worker know these things? We find that *only one worker in five is aware*

of having received any information whatever from his employer about profits and wages.

Here, I think, we are at the root of the problem. We are face-to-face with the task of improving inadequate human communications. Since the first days of the telegraph we have excelled in the development of the *tools* of communication. We are adept in the communication of market prices, production orders, shipping instructions, and the like. But we have been inept in the communication of *ideas*—and of the information which creates understanding among people who work together in an enterprise.

This faulty communication is the real root cause of most strife within business organizations, among groups in society, and, for that matter, among nations. The complexity of modern industrial life breeds a deep-seated sense of loneliness, insecurity, frustration, and often neurosis in the individual. In the workplace this frequently means uncooperative and radical attitudes. In the community it results in a general distrust of, or indifference to, industrial institutions.

What Price Understanding?

If you have ever spent much time on a farm, you know how fully farm people understand one another. The farmer, his tenants, if any, his helpers, and his family are intimately in touch with the details of the operation and with one another's views and aims. Each one knows exactly where he stands. The connection between cause and effect on a farm is tangible and visible. In the words of the proverb, "As ye sow, so shall ye reap." You plant corn to raise corn, wheat to raise wheat. You can measure the effect of your own effort and intelligence, making due allowance for the hazards of wind and weather, in terms of results.

In a modern industrial organization or a far-flung railroad, however, the distance between cause and effect—effort and reward—becomes immense. At every level, the individual is uncertain of his own place in the enterprise and even less certain that his contribution is recognized. *If such gaps exist within the business organization, how can they fail to be reflected in public attitudes? If our own employees lack information, how can we expect the public to be informed?*

Thus we have identified the problem and its causes—namely, lack of information, and misinformation, due to inadequate communication of essential facts. We are ready to decide what needs to be done but not without certain important stipulations. First, when we speak of "lack of information," let us beware of anything smacking of smugness. Can we assume that the solution lies simply in giving people what *we* call "the facts"? Are *all* the facts in our favor? Is the American economic system flawless? Is management blameless?

No, and if we want to be believed, we must be moderate in our claims. The American system is the best in the world, despite its faults. But the credit may be due more to the inherent merit of the system than to management's own virtues. I shall certainly be the last to contend that men founded businesses and built railroads out of a primary desire to create jobs and improve living standards. Profits were the basic motive. I shall be the first to insist, however, that

every worthy business enterprise has made jobs and bettered living standards and that the profit system made this possible.

At the same time we must face a basic weakness in the system—depression accompanied by unemployment. We must acknowledge this, even though we have no time here to discuss it in detail. Somehow we've got to find the way to economic stability. This begins with a new concept of our responsibilities in human relations generally. We are learning, slowly, that the best way to insure the profitable continuance of a business is to operate it in the public interest.

I think we must represent ourselves *as people* to the people with whom we work. We are neither noblemen nor frock-coated fat cats. We are just *human beings*, with worries and problems like other human beings. We make mistakes but our intentions toward other people are good. Here we must enter a second stipulation: Our good intentions must be sincere and real. They must be provable in terms of an active effort to earn the confidence of employees, consumers, and stockholders. No amount of communications will whitewash insincerity or fill a moral vacuum. But people will honor the intentions of a management that is trying to live by a high standard, even though it frequently fails.

Don't think for one moment that I am presenting myself to you as an authority on human relations. Rather, I am reporting to you on a study which has just begun. Neither do I wish to suggest that General Foods has made great strides and amassed great experience in this field. Quite the contrary—we have barely scratched the surface. Mine is the conviction of a somewhat recent convert. I have become so fully persuaded of the importance of industry's information job that I am determined to further it in any way I can. To every possible extent, I believe, all management must give greater emphasis than ever before to personnel administration and public relations—of which communications is a vital part.

What the Workman Wants

Reinforcing this conviction is another Opinion Research finding of importance—namely, that *people who are satisfied with their jobs tend to approve of the economic system*. Those who are unhappy in their work, on the other hand, have a stronger leaning toward social change. Obviously it will pay us to create the conditions of job satisfaction to the best of our ability.

What are the ingredients of job satisfaction? The employee has his own ideas about that. Here are the factors which he lists, in the order of their importance to him: (1) Interesting work, (2) job security, (3) the interest the company takes in the individual, (4) chances for advancement, (5) working conditions, (6) handling of workers' complaints, (7) pay, (8) the immediate supervisor, (9) the other people on the job, (10) vacation policy, and (11) working hours. Please note that the rate of pay stands seventh in order of importance on this list and working hours ranks eleventh.

Most of these factors are easily within the control of management and depend to some extent on information. Work is more interesting to the informed em-

ployee. He enjoys a greater sense of security if he knows about expansion plans, research, new products, and so forth. He gets evidence of personal interest when he receives a communication from his employer. And so it goes.

Now for Step Three: How do we go about solving this problem? A logical first move is to ascertain what is being done. The answer to this appears to be—"everything and nothing."

On my way to work in the morning, I encounter some good examples of management communications to the public. The advertisements and posters of the railroad industry's excellent public relations campaign catch my eye. They give me some thought-provoking facts about the carriers' achievements and their problems of taxation, wages, dividends, and so forth. In my newspaper I find a fair amount of public relations advertising. The utilities and the electrical companies, General Electric especially, seem outstandingly active. Their statements deal with fundamental economics in a manner that is reasoned, factual, and interesting. At the office I find the annual reports of many corporations. By past standards, most of them are triumphs of good presentation.

Still in an inquiring mood, I ponder some of the things being done in our own company. We have an employee publication. Most of our general managers get out periodic letters to the people under their immediate direction. Some of these letters are mighty good, with just the right blend of friendliness, frankness, and fact. We publish what we think is a good annual report. We have also a published statement of employment policy. The "Fact Books" we distribute to employees in the various divisions seem to me to be sprightly and informative. We have in preparation a semi-historical booklet describing the company as a whole. We publish various internal bulletins and special booklets. Our stockholders get a fairly comprehensive publication of their own. We cultivate consumer good will with many services covering recipes, product inquiries, and the like. We use some plant-town advertising and we encourage plant managers to participate in local affairs. Our contributions and memberships are carefully allocated so as to do what we believe to be the most good. When we open a plant or inaugurate a major improvement, we make quite a community ceremony of it.

Closing Down a Plant

If we close a plant, we do so only after an exhaustive engineering and economic survey has proved it inevitable. Closing a plant is a heart-rending business at best but there are ways of doing it. Last year it happened. And one of our general managers went personally to the scene months in advance. He called the employees together, told them the whole story, including their termination benefits, explained the situation to the newspapers and community leaders, and made every possible effort to help employees locate jobs elsewhere. We have had some appreciative letters from local leaders and from some of the employees themselves. In a mournful sort of way, we cannot help being rather proud of that.

Considering management communications in its broader aspects, we try also to practice what we call

"consultative supervision." Perhaps we do not always succeed but we seek, at least, to consult every employee about the things on which he feels he has a right to be consulted. We also conducted an executive development course recently to acquaint department heads with the work of all departments in relation to the whole. We work pretty hard at training, safety, work simplification, and job evaluation. We even have position evaluation for employees earning \$6,000 a year or more. We hope this will offset some of the uncertainties and frustrations to which supervisors at every level are no less immune than other employees.

Reviewing these things, our management might be tempted to engage in a little self-congratulation. When we inquire about the things that others are doing, however, we are suddenly humbled. I asked my associates for examples and received a small mountain of them. They are, frankly, more than I have had time to examine closely.

Someone then reminds me of the continuing, great job that the American Rolling Mill Company has been doing for thirty-odd years, dating back to the splendid statement of management policy which the late George M. Verity published in the days when most managements considered their affairs to be no part of anybody's business. And Charlie Hook also pioneered in this work.

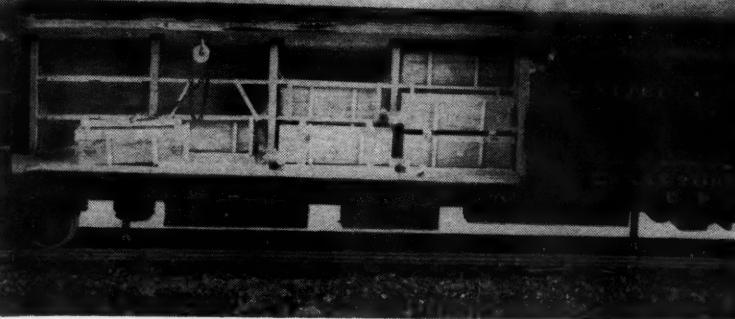
Someone else shows me a booklet entitled "Let's See What Makes You Tick" which Thompson Products got out some years ago. It was published for a purpose. Research had shown that employees lacked a full understanding of Thompson's excellent incentive plan. The booklet helped straighten it out, brightly and quickly. But that is not the remarkable thing about it. What is remarkable is the fact that it merely typifies scores of similar activities to which Thompson's dynamic Fred Crawford has addressed his energies for years. Like Armco, Thompson Products has been an island of harmony in a sea of strife. Admittedly and unfortunately, there are few Fred Crawfords. But he certainly helps us to get our sights on the question: What can be done?

By citing such examples we could just about prove that "everything" is being done about the problem. But I have already said that the real answer is "everything and nothing." Why? Well, let us look at a list of the ways in which management can communicate with employees and the public. It is literally too long to read. It includes 25 items, ranging from face-to-face contact all the way through bulletin boards and employee magazines to network radio. Face-to-face contact, as a matter of fact, will always be the best and most effective medium. All the rest are tools to reinforce it or take its place.

We hear of companies whose top management regularly meets with all employees with good results. But these are exceptions. *How many top management men can honestly say that a majority of their employees even know what they look like?*

How many managements are using any large number of the other tools of communication? Let me quote a survey by Factory magazine covering 100 typical companies. It shows, among other things, that 47 use employee publications and 99 use bulletin boards. That's not bad, perhaps, but it's not good either. For

(Continued on page 66)



Above—For movement from ports to 15 distribution centers, mortuary cars, converted from wartime hospital equipment, are used. This model shows racks and overhead tackle. **Right**—Remains of war dead are handled in specially equipped mortuary cars; they are under military escort at all times



Special mortuary cars move bodies from ports to 15 distribution points; individual movement beyond; procedures result from tests

RAILROAD MOVEMENT OF WORLD WAR II DEAD

The first of an estimated 184,000 remains of Army, Air Force, Navy, Marine, Coast Guard and certain civilian personnel who lost their lives overseas in connection with World War II and were buried in foreign fields during that conflict arrived at the United States ports in October, 1947.

To insure smooth operation in the transportation of these remains, the chief of transportation, Department of the Army, prepared detailed plans which take into account various points discussed at conferences held with the interested railroad representatives, Army area transportation officers, port transportation officers and distribution center transportation officers, together with their key civilian personnel assigned to this program. The problem was particularly complicated by the fact that all remains of World War II dead must be accorded dignified and reverent treatment, and must at all times be under military guard or escort. In addition, a series of traffic conferences was held in each Army area at which interested military personnel, as well as railroad officials and passenger representatives, were in attendance, during which proposed plans and procedures for transportation of remains were discussed in detail.

Upon receipt at the New York and San Francisco ports respectively, the hermetically sealed caskets bearing the remains are moved in special trains with special equipment to the 15 distribution centers strategically located throughout the country. On the first leg of their domestic journey the remains move in specially designed cars, remodeled from hospital cars, which have a maximum capacity of 66 casketed remains per car, and are accorded a special rate by the carriers, with the regular tariff rate applicable to the guards who accompany the cars. An illustration indicates the reverent manner in which the remains are handled, and includes a view of one of the specially equipped cars for the handling of these remains. In addition there is portrayed a model of a specially-equipped

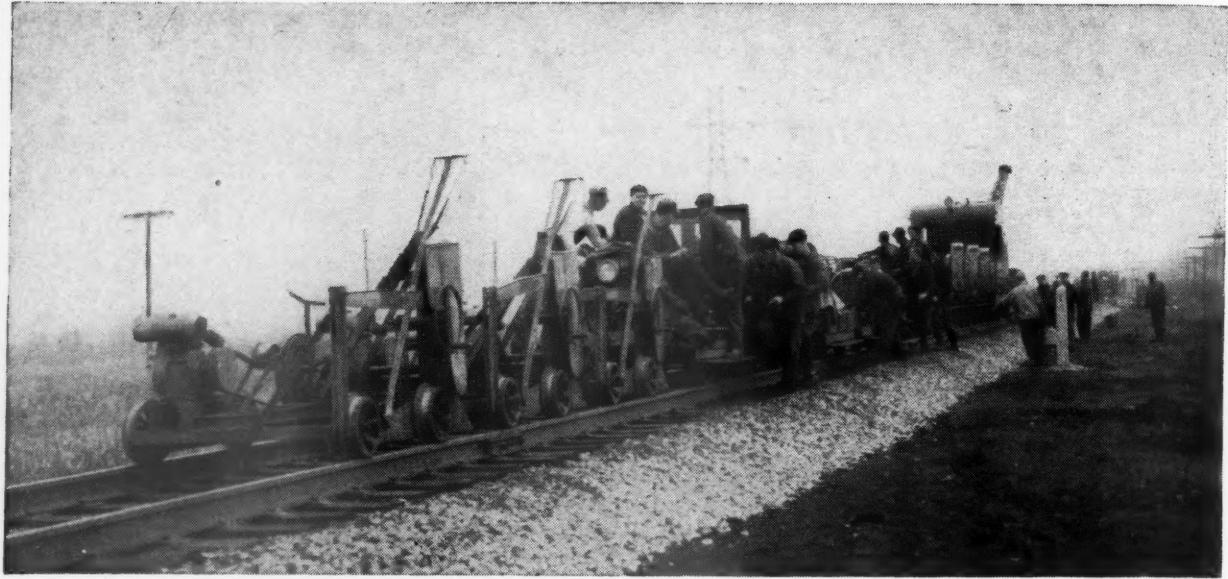
mortuary car, prepared from actual blueprints by John Beswick, an employee in the Movements division, Office of the Chief of Transportation.

From the distribution centers, the remains move individually in carrier-owned baggage cars at the first-class passenger fare. For this portion of the journey, each body is escorted individually to the place of delivery specified by the next of kin.

The Movements division conducted a survey of all the railroad passenger stations in the United States to determine the appropriate distribution center through which each of the remains will pass en route to the final resting places. This information is used by the Office of the Quartermaster General in the preparation of "disinterment directives" in order that the code number of the distribution center can be stencilled on the shipping case when the remains are placed in the casket.

Representatives from the Movements division and Water Transport Service division, Office of the Chief of Transportation, assisted by representatives of the Association of American Railroads, participated in a series of tests of the proposed shipping cases at the Quartermaster Test Board at Camp Lee, Va. A number of defects in the original design were observed, and improvements were made to strengthen the cases and to make them easier to handle with a minimum of damage.

The 118 hospital cars which were converted into mortuary cars are equipped with stanchions, a monorail, two sets of block and tackle and overhead lights, which are necessary for the loading and unloading of the cars since the windows have been covered with metal plating. By the use of specially designed equipment, the casketed remains may be lifted and moved into the proper racks with a minimum of effort. The casketed remains are moved into the stanchions by use of loading bars, and to facilitate operation both the loading bars and stanchions are equipped with rollers.



A large, highly-mechanized, regional rail-train organization ready to move into its camp-car headquarters for the night

THE REAL VALUE OF M. OF W. WORK EQUIPMENT

It is not in the amount invested, but rather in its ability to produce more and better work with less physical effort, a greater degree of safety for workmen, and at lower unit cost*

By S. R. HURSH
Assistant Chief Engineer-Maintenance
Pennsylvania

The continuous rise in the cost of labor and materials used in the maintenance of track and roadway structures offers a challenge to all maintenance-of-way supervisory officers to develop means and methods whereby the fixed properties can be maintained with a smaller expenditure per unit of work performed or, as another measure of performance—at less cost per million gross tons handled.

Prior to World War II the greatest tonnage ever handled by the American railroads was in the years 1929 and 1930. Because of the peak business, gross revenues in those years, as well as the expenditures for maintenance, were the highest on record up to that time. In the same two years more rail was laid and more ties installed than ever before—or at any time since. It necessarily follows that in those years more employees in Group III (maintenance of way and structures) were employed than in any year since. Wages and prices of materials at that time were nothing compared with those prevailing today.

The cost of maintaining the roadway, structures

and track of the Class I railroads in 1929-1930 was \$637 per million gross ton-miles of traffic carried. How does this compare with the performance during the recent war and the period since? The tonnage carried during 1944, the peak year of the war—2,316,517,152—was approximately 79 per cent greater than the 1,294,412,000 tons carried in 1929, whereas the cost of maintaining the roadway and structures in 1944 was only \$490 per million gross ton-miles. In 1944 there were only 294,000 employees (in maintenance of way and structures work), or 28 per cent fewer than in 1929. During that year also approximately 400,000 less tons of rail and 26,600,000 fewer ties were used—in spite of the fact that rail wears out at a rate in direct relation to tonnage, while ties are affected by 30 per cent by tonnage.

How was this possible? How could the maintenance-of-way departments do the job with so much less labor, so much less rail, and so many fewer ties—especially in view of the increased number of train units operated, which added to the loss of time of the maintenance forces and reduced the efficiency of their production?

* From an address to the Metropolitan Maintenance of Way Club in New York on February 26.

Four factors are outstanding in the answer to this question. Without giving them in the order of importance, they are:

- (1) The use of larger rail.
- (2) The extended and universal use of treated crossties.
- (3) The use of larger tie plates.
- (4) The extended use of labor-saving machinery and equipment to do maintenance-of-way work.

While all of these factors were of great importance in the war record of the maintenance-of-way forces, and while all of them will continue to exercise a favorable influence in the results achieved by these forces, the remainder of this paper will deal with the last named—labor-saving machinery and equipment—from the standpoint of its value in effecting economies in roadway and structures maintenance.

Book Value vs. True Value

Due to the ingenuity of railroad men and splendid cooperation of the manufacturers of equipment great strides have been made in the machines that are available to the maintenance-of-way forces. As a result, today we have units of machinery or equipment to do almost every type of work—machinery that will permit us to get more units of work performed in a given time for less man-hours than was ever possible before.

In 1922 the Class I roads had approximately \$48 million invested in roadway machines and work equip-

ment. In 1930, eight years later, that investment had mounted to \$84 million. By 1938 there was no material increase, but by 1942 it had increased to \$95 million, and today the investment is well over \$100 million. How much of this investment in roadway machines and work equipment belongs to your road? Your valuation department can give you the answer, and it might be well to determine if you have received your due share, or if your company has lagged behind in the purchase of machinery and work equipment for carrying out its maintenance-of-way work.

But the real value of roadway machines does not lie in the amount invested in them. Rather, it lies in their ability to produce more and better work with less physical effort, a greater degree of safety, and at lower unit cost. These factors may be summed up as follows:

- (1) Reduce the man-hours of labor and hard physical effort to perform a given amount of work.
- (2) Produce a better quality of work—with increased safety.
- (3) Perform more work for the least expenditure of money.

Consider first the factor of reducing man-hours of labor and hard physical work.

You, no doubt, have heard it said that machines are invented and developed to put men out of work. Obviously, this statement is not true, to the extent that most machines are designed to produce a higher quality of work, with less physical effort and a greater degree of safety. It is true that many machines are



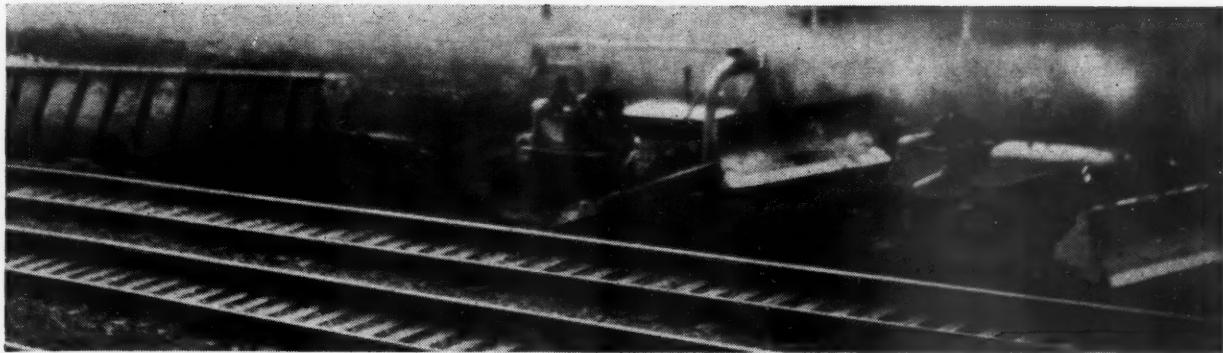
A shoulder Mole cleaning stone ballast entirely in the clear of traffic



A large-capacity, off-track air compressor in out-of-face surfacing operations

One of the highway truck-tractor, heavy-duty, semi-trailer outfits used on the Pennsylvania to rush tractor bulldozers to the scene of emergencies





Two tractors pulling a wrecked car clear of the tracks over which it had fallen

designed to increase production and the efficiency of labor, because it is only by securing greater efficiency and increased production per man-hour worked that industry can pay the wages that are now being paid and still survive. And this certainly applies to the railroad industry.

But one of the most important values in roadway machines and work equipment is to make the work of the track forces easier, less tiresome and more interesting, while at the same time making it possible to pay good wages. These ends must be achieved if we are to secure the quality of labor required to perform the necessary roadway work—and the roadway must be maintained if we are to continue to run trains and improve train service generally.

We cannot deny the often-heard expression that we are in a machine age. We are, and that applies to the railroads and in track work as well as in other industry. All young men today are interested in machines and mechanical devices. Almost any man asked to use a machine becomes interested if he really believes that the machine was designed to perform better work or to make his work less laborious. If he is impressed with the thought that the machine was developed to make his way of life better, and that he was given due consideration when the machine was designed, he will take care of the machine, protect it and operate it as though it were his personal property. In fact, you will find him studying it, and before long, he will recommend improvements that should be made in the next model.

Give a new employee today a tamping pick and his eyes and chin will drop with the realization that he is being asked to do one of the menial tasks in the track department. But give that same man a power tamping device and he will perk up, go to work, and wrestle with the machine until he has mastered it in order that he may do good work with the least physical effort on his part.

Better Work—Greater Safety

Consider the second factor in the real value of roadway machines and work equipment—the value of producing work of better quality, with greater safety. Many supervisors will remember when they were shipped their yearly allotment of rail and told to get it in by brute force, even to the extent of unloading it from cars—and then loading the released

rail—by hand. Under such conditions it was not only necessary to bring together all available extra gangs, but also to take many section gangs away from their essential routine work for periods of weeks at a time in order to lay rail.

Today, on the other hand, most railroads have division, grand division or regional rail-laying gangs. One large road has regional rail-laying trains, each with a full complement of machinery, which travel over the road much like Ringling Brothers' circus, with one-day or one-week stands while laying rail on a production basis. Laying rail by these highly-mechanized rail-train organizations costs today about \$10.70 a ton, whereas it is estimated that to do the same work by hand methods would cost approximately \$20.70, or about \$10.00 per ton more. Furthermore, a higher quality of work is attained, with less possibility of damage to materials.

In the latter regard, distributing rail and fastenings by means of cranes results in less damage to the rail than the old method of barring it from cars, and the use of machines to install new rail makes it possible to do the work with less damage to the rail and other track material, and to secure a higher grade of work as to refinement and detail.

The power-track wrench, with little effort, will remove frozen nuts from track bolts that could not be removed by men with wrenches, and eliminates to a large extent the sledging or acetylene cutting that would otherwise be necessary. This same machine, when applying joint bars, will produce the same tension in joint bolts one hour before quitting time that was secured one hour after starting time in the morning, thus eliminating the lack of uniformity in the application of joint-bar bolts when done by men with wrenches who, because of fatigue, have less physical strength toward the end of the day.

Operation of the tie-adzing machine, like many other machines, involves certain hazards if not properly performed, but can you conceive of men using hand adzes more safely, and at the same time giving the tie plates as good a bearing as can be secured with the power adzer? Is it not true also that rail handled with a Burro or small locomotive crane will not be bounced around like that being handled by men using hand rail tongs, and that through a season's work with such a crane there will be fewer foot injuries than when "setting in" rail by hand?

Spikes driven with pneumatic hammers will be

straight, have better holding power, and sustain much less damage than those driven with hand mauls. Rail held in place by spikes driven with power tools will not have as many base nicks as rail held by spikes driven by hand.

Planning Next Season's Work

At the conclusion of each working season, each maintenance officer reviews what he has accomplished during the season just passed, and invariably wishes that he could have secured more work with what he had available. He then turns to planning his next season's work, and one of his major considerations is the supply of roadway machines and work equipment that will be available for him to carry out his work. Many questions must be considered and answered. In the 25 or 26 working days each month, how many feet of track can be cleaned with the number of Moles that will be available? Will all of them have to be double-tricked or can the program be carried out by working some of them one trick and others two tricks?

Similar questions arise concerning tie-tamping compressors, ballast-cleaning machines, bulldozers and crawler cranes to be assigned to ditching projects, rail and structural electric-welding generators, pile drivers, concrete mixers, paint-spraying compressors, frog and switch-point grinders, rail-joint cross grinders, power track wrenches for the periodic out-of-face tightening of bolts—in fact, for every machine that will be available.

And then there is the question of operators. How many men properly qualified to operate the various machines will be available when the busy season starts? If you personally had purchased these machines, would you be willing to put them in the custody of the operators you plan to use on them? When you put an unqualified operator on a machine, you still have the responsibility of properly operating and caring for it. You cannot "duck" your responsibility in this regard.

Have you planned to use the right size machine to secure the maximum amount of work? Have you figured on your repairmen having an opportunity to observe the performance of the machine operators to detect any practices or conditions which, if changed, will result in the reduction of break-downs? Have you attempted to find new work for some of your equipment?

Off-Track Wrecking Equipment

All of you, at one time or another, have seen badly twisted and torn track and roadbed over which a large amount of stone, iron ore, coal or other mineral freight has been spilled, or is about to be spilled by wrecking crews attempting to remove badly broken or damaged freight cars. You have seen a large number of track men with picks and shovels, tie and rail tongs, claw and lining bars, together with many other hand tools, struggling to clear a space to permit rebuilding of the track. The resulting confusion and time required by such operations are most nerve-wracking.

Many roads have found that bulldozers can do

the work of many men in clearing the way for rebuilding tracks. This equipment can move car wheels and trucks and car sides and parts that one would not attempt to move by hand. Equipped with high-powered winches, these machines can drag wrecked railroad equipment clear of areas where the tracks are to be rebuilt and greatly reduce the amount of work that otherwise would have to be done by large wrecking derricks. However, bulldozers are usually purchased for programmed ditching and grading work, and are seldom bought for auxiliary wrecking purposes. Hence, when a wreck occurs, the bulldozers are usually at distant points.

On the Pennsylvania, recognizing the value of off-track work equipment in wrecking operations, we have established auxiliary off-track wrecking equipment headquarters. At each of these locations we headquartered a 20-ton capacity highway truck-crane and a highway truck-tractor with a steam-shovel-type, heavy-duty semi-trailer, on which is mounted a Class B (next to largest type) bulldozer equipped with a rear-end power winch.

The highway truck-crane is used regularly by the master carpenter or supervisor in bridge, culvert and building programs. The bulldozer—in reality, a crawler tractor equipped with an angle-dozer blade—is used regularly in connection with widening cuts, improving drainage, grading for new sidings or track relocations, etc., and is transported daily between its headquarters and points of work on the heavy-duty semi-trailer. At the close of each day's tour of work the highway-truck crane and the bulldozer are returned to their headquarters and are held ready for emergency call.

Special Road Maps Provided

The weight and dimensions of the highway truck-crane and bulldozer mounted on the heavy-duty semi-trailer are such that these units cannot be moved over the highways without consideration to the capacity or clearances of the bridges to be encountered. With this in mind, we have prepared special road maps of the main and secondary highways along our lines, covering the territories in which we may have to move this equipment. These maps indicate the clearances under overhead bridges and the capacities of those that may have to be crossed. They also indicate where flagmen must be used to prevent other vehicles from attempting to pass the equipment when the roadway width will not permit safe passage. Furthermore, they indicate locations defined as "pilot points," along the main highway.

The operators of the auxiliary wrecking equipment are required to know the routes and restrictions from their headquarters to any given pilot point. Hence, in emergency, the driver or operator can be called and told to proceed to a designated pilot point, with the assurance that he will get there safely and in minimum time. At the pilot point the operator will find a pilot familiar with the local roads, lanes, bridges, etc., that can be used for further movement of the equipment to the scene of the emergency work.

The bulldozer, mounted on the heavy-duty semi-trailer, cannot be moved over the average state high-(Continued on page 61)

THE DOLLAR VALUE OF LIGHT

Studies show a definite relation between increases in illumination and decreases of accidents—Production and lighting increments are similarly related

By **H. L. LOGAN**
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The question "What is the dollar value of light?" which was raised in the December 20, 1947, issue of *Railway Age* in an editorial under that title can be answered in a broad way by asking what would happen if we could turn back the clock and take away artificial light. This would reduce the working day to periods when sufficient natural light is available, and restrict working spaces and facilities to those to which sufficient daylight is accessible. Is there any doubt that industrial production would drop at least 50 per cent? Without the aid of artificial light the present national income of the American people would be at least \$100,000,000,000 less than it now is.

While this general statement does not directly help a railroad operator or a manufacturer to appraise the dollar value of light in terms of his own business, they are both proportional parts of this general picture, and it is well to keep the national background in mind in considering this question. A particular appraisal should attempt to assess both the penalties that flow from the inadequate or improper use of artificial light, and the benefits that follow from sufficient application.

Effect of Light on Accident Rates

Lighting literature includes various instances where the accident rate dropped in a department, or even in an entire plant, when lighting conditions were improved. In one case the average illumination in a punch press department was raised from 2 footcandles to 19 at work level. The frequency of accidents dropped 54 per cent.¹ In another plant a rise to 30 footcandles from 8 caused a drop of 11 per cent in the accident rate. This is reasonable, as this plant had enough general light to provide fair visual conditions at the original level, and did not, therefore, have as severe an accident rate as in the previous case. By adopting 8 footcandles originally, this plant had saved itself from many possible accidents. The rise to 30 footcandles simply eliminated the remainder of the "light-vision" accidents that could still occur at the 8 footcandle level.

R. E. Simpson² cites a striking case. A factory employing 1,000 workers had an annual accident rate of 425. A new lighting system was followed by a drop to 170. Compensation payments dropped from \$59,500 to \$23,800 annually, which was a saving of

¹ "How Good Lighting Can Contribute to Safety," R. A. Palmer, I. E. S. Trans. Vol. 35, 1940, page 361.
² "Proper Lighting As An Aid in the Prevention of Accidents," R. E. Simpson, I. E. S. Trans. Vol. 19, 1924, page 93.

nine times the cost of the improved lighting. The dollar value of the new lighting because of accident prevention was therefore nine dollars for every dollar spent.

The largest part of the accident bill in industry is probably caused by accidents that go unrecorded because they are not technically "loss-of-time" accidents.³ It is customary to record "loss-of-time" accidents on the basis of whether or not the worker has to go home, or to the hospital. If his injury is such that he can stay at his post, whether he can do effective work or not, the event is not recorded as a "loss-of-time" accident. Neither are accidents to machines which also interrupt production recorded as "loss-of-time" accidents. The bill that industry and transportation pays for preventable accidents is, therefore, much larger than statistics reveal.

The most striking proof of the relation of accidents to light lies in traffic-accident experience. For example, a traffic survey in Trenton, N. J., early in 1937, uncovered a relatively high percentage of night accidents, with a considerably higher incidence at 33 intersections.⁴ At these intersections, night accidents were 50 per cent of the total, while in the city as a whole only 42 per cent of all accidents occurred at night. These intersections were then scientifically lighted. Injuries decreased 40 per cent and fatalities 50 per cent at night. The economic loss owing to the night-traffic accidents at the 33 locations, before improvement, was \$89,900 per annum. After improvement, the loss was \$52,700. The improvement cost \$3,292 per year, proving once again that it cost less to prevent accidents than to pay for them. The dollar value of light in this case was \$16 for every dollar spent.

The relationship between light and accidents is clearly indicated in the traffic figures of the borough of Manhattan, New York. There was 118 daytime fatal crashes in 1941, and 151 fatal crashes at night, despite the smaller traffic load at night. In 1942, under dim-out conditions, although daytime fatal crashes dropped to 86, owing to fewer cars on the streets, fatal crashes at night jumped to 254.

During the dim-out period of the war, night-traffic accidents in six of the principal communities of Connecticut increased 56.7 per cent over the rate in the same communities when normal street lighting was used.

Detroit had 96 fatal night-time crashes on 100 miles

³ "The Role of Lighting in Accident Prevention," H. L. Logan, Electrical Engineering, Vol. 62, April, 1943.

⁴ "Lighting and Safety," H. L. Logan, Electrical Engineering, June, 1945.

of its streets selected for special study during the two years of 1935-1936. Street lighting was scientifically improved on these streets in 1937. The total fatal crashes by night for the succeeding three years numbered 34. Examples of this kind can be cited indefinitely.

The objection has been raised that traffic-accident experience has no bearing on industrial-accident experience. The answer is that the eyes are obeying the same light stimulus, whether in night traffic, or in the factory, and are operating under the same physical and physiological laws.

It is true that there are fewer complicating factors in analyzing traffic accidents so that the influence of lighting is more readily revealed. The reduction of accidents by means of lighting in the New York City subways, cited in the *Railway Age* editorial, resulted in a reduction of money awarded for damage claims amounting to more than \$150 for every dollar spent for improved lighting.

Light and Production

In May, 1927, the magazine "Light" carried a report of a British investigation on the relation of illumination levels to production rate that showed production on night shifts in the printing industry passed the day shift rate when the illumination level provided was 20-25 footcandles. The investigators found an increase of performance for night shifts of 33 per cent over previous performance. At the same time, errors dropped to the daylight rate, which was a decrease of 57 per cent from the previous high error rate of night shifts.

Thus, the penalty for inadequate lighting was the loss of the 33 per cent of production that the tests showed was possible with better lighting, and the spoilage caused by the 57 per cent of excess errors. Conversely the benefit was the salvaged production.

Nine production tests—made in the plants of Pyott Foundry Company; Foote Brothers; Lee, Loader & Bondy Company; Stromberg Carburetor Company; Dover Manufacturing Company; General Electric Company; Detroit Piston Ring Company; Timken Roller Bearing Company; and the U. S. Post Office Department—showed that for increases in illumination level of from 2 to 24 times, production increased from 4 to 35 per cent, for a cost equivalent to from $\frac{6}{10}$ of 1 per cent to 5 per cent of the payroll.

The average increase in illumination was four times previous practice; the average production gain was 15 per cent, and the average cost was 2 per cent of the payroll. In these plants, therefore, the average dollar value of lighting in payroll terms was \$7.50 for every extra dollar spent.

Applying the same average payroll cost to the British investigation, the dollar value of lighting to the British printing industry would be indicated as \$16.60 for every extra dollar spent.

Twenty-nine years ago, the author ran a three-weeks test on the effect of improved lighting in the Dolphin Jute Mills. The machines were automatic, and their speed could not be increased. Nevertheless, the finished jute turned out on the machines in the area selected for test averaged 23 per cent greater than for the control machines that were not provided

with improved lighting. The reason was that the specially lighted machines were more continuously in production. The breaking threads could be seen more quickly by the operators and secured without stopping the machine, whereas without adequate light a scabbled-up mess would result on the control machines, often putting them out of action for twenty minutes at a time.

Prof. E. Huntington of Yale University published his study of "Civilization and Climate" in 1922. This included a study of the work of piece-workers in Connecticut and Pennsylvania factories. The data show that the output of these workers, which declines with the onset of winter, with its colder and "shorter" days, begins to rise in January each year, before the temperature curve rises; the net increase of 1.5 per cent in output being due to the improving natural light which gets in its effect on workers ahead of the effect of improving weather.

Agencies of the British Medical Research Council have recently reported the results of an investigation into "the relation between illumination and visual efficiency,"⁵ which shows the degree to which visual efficiency increases as illumination levels are raised. This study, the broadest, most thorough and scientific that has been reported to date, makes it possible to determine the illumination level that will permit a specific rate of visual performance for a specific task. A scientific way is thus provided to measure the dollar value of light in specific cases.

In a particular situation, the method may show that 20 footcandles of illumination will permit visibility that is 90 per cent of the maximum possible. It may also show that 45 footcandles will permit 95 per cent of maximum visibility as measured in production. The higher level will then increase production by %0ths or about 6 per cent. If the cost of raising the lighting levels from 20 to 45 footcandles is equal to 2 per cent of the labor cost, its value in equivalent labor would be \$3.00 for every dollar spent to get the higher level.

An "Illumination Levels Indicator" has been developed, based on the British work, that permits this kind of an analysis to be made in the field.

In conclusion: (1) The true dollar value of light is the difference in national income enjoyed by a population that can *see*, and the national income of the equivalent entirely *blind* population that could maintain itself in the same region. This is impossible to estimate, but can anyone doubt that the difference would be fantastically great? (2) The true dollar value of artificial light is the increase in national income caused by operating our national economy through twenty-four hours of each day, and caused by the efficient concentration of functions, and the efficient use of space made possible by artificial light, as compared with the national income that could be enjoyed if activity had to be confined by the strait-jacket of natural lighting.

The true value of artificial light to the American people can, therefore, be reasonably estimated at something more than one-half of their present national income.

⁵ "Industrial Health Research Board Report" No. 87, London: His Majesty's Stationery Office—"Proposals for a New Lighting Code," H. C. Weston, I. E. S., (London), Trans., Vol. 8, No. 2, February, 1943.

MEDIATION BOARD REPORTS ON FISCAL 1947

Records settlement of T. P. & W. strike, blaming road's former management without reference to board's own failure to certify case for appointment of emergency board

Without reference to the fact that the late George P. McNear's refusal to agree on arbitration proposals involved no departure from Railway Labor Act procedures, or to its own failure to follow its usual practice of certifying strike-threat cases to the President for appointment of emergency boards, the National Mediation Board has characterized the Toledo, Peoria & Western strike as one which was caused by the "adamant refusal of the carrier's management to agree to the employee requests." The statement was made in the board's annual report for the fiscal year ending June 30, 1947, which went to Congress this week.

The comment on the T. P. & W. situation was included to record the fact that the strike ended during the fiscal year under review. Following the murder of Mr. McNear, the new management made agreements with the strikers, thus ending on April 22, 1947, the strike which had been on for nearly 19 months.

As Board Sees T. P. & W. Case

"During 1947," N.M.B. said, "the prolonged strike of some 300 employees of the Toledo, Peoria & Western was brought to an end. The strike extended from October 1, 1945, when operation of the road was returned to private management by the Office of Defense Transportation which operated the property during the war. The dispute which led to the strike extends back to 1941 and involved efforts of the employees to secure the same wages and working conditions as are in effect on Class I railroads generally throughout the country. Adamant refusal of the carrier management to agree to the employee requests led to one of the most bitter and prolonged labor disputes in recent railroad history. Striking employees lost their lives and the carrier's president was assassinated under mysterious circumstances which have not yet been solved."

The foregoing is in contrast to the treatment the board's previous annual report accorded the strike staged in May, 1946, by the Brotherhood of Locomotive Engineers and Brotherhood of Railroad Trainmen. As reported in the *Railway Age* of March 1, 1947, page 458, that fiscal report's review of events leading to the nationwide walkout emphasized that the two brotherhoods called it "after exhausting all procedures of the Railway Labor Act," and that they were not bound by law to accept the recommendations of the emergency board to which their case went after they refused to join in arbitration proceedings with the other 18 unions.

As to the general situation in fiscal 1947, the present report calls it a year in which "strikes and threatened strikes were common on the American industrial scene," and in which there were "very few days" when

the board "was not faced with threatened interruption to rail or air transport service as a result of unsettled labor disputes." However, as the report puts it, Railway Labor Act procedures "for the most part" were "effectively applied and the threatened interruptions prevented."

Asserting that "the effectiveness of the act has been demonstrated many times," the board looks upon the act's failure "in a few instances" during the year under review as a development which "serves to emphasize the need for its provisions and alertness in applying its step-by-step procedures for achieving peaceful settlements of disputes." This brought the board to its listing of the walkout of pilots employed by Trans-continental & Western Air, Inc., as "by far the most costly strike" of the fiscal year. Here, it noted, that the pilots struck "after exhausting all procedures" of the act.

Then came the comment on the T. P. & W. settlement, the board proceeding to observe that other fiscal 1947 strikes on carriers covered by the act "were of short duration or minor importance." The fiscal year opened with a backlog of 94 pending cases on the board's docket, and closed with a backlog of 126 cases. During the year, 426 cases were disposed of, a decrease of 163 below the 589 disposed of in the previous year.

Adjustment-Board Situation

One major reason for the drop, the board says, was the necessity for assigning a large proportion of its staff of senior mediators "to grievance cases which under the law are referable to the First Division of the National Railroad Adjustment Board." Like its recent predecessors, the present report complains about the situation on the Adjustment Board's First Division which is "still far from achieving settlements of disputes involving train and engine service employees." Such cases are coming to N.M.B. because "employee organizations, dissatisfied with long delays," have been by-passing the Adjustment Board. N.M.B., as the report puts it, "considers the inability of the First Division to keep abreast of its work to be one of the most serious administrative deficiencies under the act."

"This," the report also says, "is a problem which addresses itself to the carrier managements and the brotherhood representatives on the railroads where failure to effect settlements allows an excessive number of unsettled disputes to accumulate. More diligence and flexibility of attitudes will result in fewer unsettled disputes to refer to the First Division. On too many carriers the First Division is looked upon as a substitute for settling disputes on the property rather than as a supplemental procedure.

(Continued on page 61)



This map of the Columbus division of the Central of Georgia shows the main lines radiating out of the division headquarters

As a mark to shoot at, the Central of Georgia has set up certain standards of operating performances for its respective divisions. These criteria consist of considering the peak performance in any one month in the last 18 years as a 100 per cent record in each case. The Columbus division of the railway, after an excellent performance throughout the year, culminated its 1946 activities in December by equalling or exceeding the standards in every category except "average carload-tons," which was 31.2 compared with the previous high in 1943 of 32.4.

Particularly noticeable in the latter part of 1946 (since it was in contrast to the general trend) was the increase in the average miles per car per day to more than 47 in both October and November, compared with the previous peak of 41 established in 1941. At the same time, the transfer station at Columbus, Ga., was also saving cars in large numbers, as well as handling them through the transfer rapidly. In 1940, the merchandise handled through this transfer amounted to 222,616,924 lb., which required the loading of 28,015 cars, or an average of 7,946 lb. per car. In 1946 the loading amounted to 342,051,293 lb., which was loaded in 17,002 cars, or an average of 20,118 lb. per car. Had the loading in 1946 been on the same basis as 1940, it would have required 43,046 cars to handle the 1946 tonnage.

Among the new high records established in December, 1946, by the Columbus division was the per cent of loaded to total car-miles, which was 74.44, as compared with 72.81, the previous high record, indicating that the increase in the average miles per car per day was obtained by improved operating methods, and not in piling up a lot of empty car mileage to make a showing. Other new records established during the month included the following:

GETTING FREIGHT CARS MOVED IN A HURRY

Increased miles per car per day and a large saving in cars for l.c.l. shown by the Columbus division of Central of Georgia

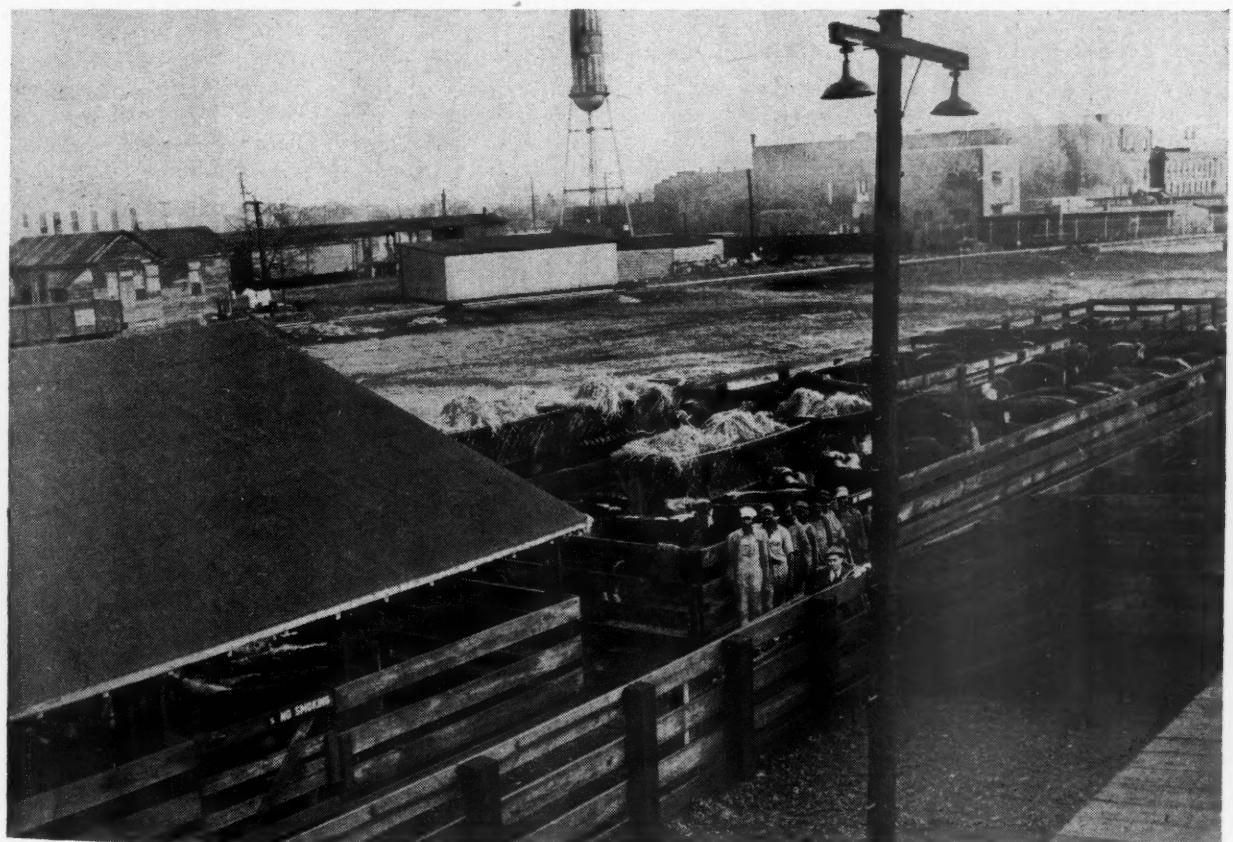
	December, 1946	Previous Peak	Per Cent Inc.
Train-miles per hour	18.7	18.4	0.2
Gross ton-miles per train-hour	29,996	26,698	12
Net ton-miles per train-hour	14,341	12,577	14
Net ton-miles per car-day	992	899	10

The Columbus division of the Central of Georgia, as shown on the map, consists of 692 mi. of road, all of which is single track, except for 6 mi. between Birmingham and Weems, Ala., and 3 1/4 mi. through Columbus, Ga., to Muscogee Jct. It consists of four lines radiating out of Columbus in different directions—one to Birmingham, 154 mi.; one to Americus, Ga., 64 mi.; one to Raymond, Ga., 73 mi.; and one to Andalusia, Ala., 138 mi. The division also comprises that section of the Chattanooga-Macon main line between Chattanooga and Griffin, Ga., 198 mi. There are also a number of branch lines. The Birmingham-Columbus line carries the heaviest freight traffic on the division and handles more passenger trains than any other district. In addition to a heavy Chicago-Florida passenger train, and a local passenger train operated in each direction daily, a fast through streamlined Chicago-Florida passenger train is operated every third day. Also during the winter season another through Chicago-Florida passenger train is operated every third day.

The portion of the line of the Columbus division between Birmingham and Columbus was rebuilt at a cost in excess of \$7 million in 1926, when 89 curves were eliminated and much grade reduction was carried out, while the distance was shortened by 4.8 mi. At the same time, 40 highway grade crossings and two railway crossings at grade were eliminated. New automatic signals of the searchlight type were installed on this district, the signals having been put in service on July 12, 1945.



Above—Portions of the Columbus division are a rugged test for railroaders. Below—Modern stock pens, scientifically located with respect to other facilities in the yard, recently constructed by the Central of Georgia at Columbus, Ga.



This line traverses generally hilly country, the rebuilt portion having ruling grades of 0.5 per cent eastbound and 1.0 per cent westbound, while grades up to 1.5 per cent occur on the west end where there are two tunnels—one just under half a mile long and the other about a quarter of a mile in length. The road climbs from 250 ft. above sea level at Columbus to 860 ft. at its highest point. There is a considerable climb out of the Birmingham area for over 24 mi. to Winburn yard. There is also a stiff climb eastbound from Sylacauga to Trammels, 6 mi. However, as described later, 4,000 tons are handled on through freight trains from Winburn to Columbus, with the assistance of a helper on the Sylacauga grade. Westward, where greater grades are encountered, the through trains handle 1,900 tons, Columbus to Birmingham, although 2,200-ton trains are ordinarily operated from Columbus to Vincent, 117 mi., where the ascending grade into the tunnel, itself on an ascending grade, begins.

Run of a "Hot Shot"

The "hot-shot" freight train on this district—No. 38—makes the run of over 154 mi. in about 5 hr. 30 min. This train handles meat, livestock, perishables and other high-class freight and is operated somewhat differently from the other through freight trains. All terminal work for the C. of Ga. in Birmingham—except for industrial switching in an area local to that railway—is handled in the joint East Thomas yard of the C. of Ga., the Illinois Central and the St. Louis-San Francisco, which is operated by the latter road. Just prior to the leaving time of No. 38 in the morning, a 2,000-ton extra train with the same type of high-class freight is operated from East Thomas yard to Trammels, 60 mi., which is at the top of Sylacauga grade, by-passing Winburn yard. Then No. 38 leaves East Thomas yard with about 1,900 tons; "main tracks" through Winburn yard; and, at Trammels, picks up the 2,000 tons brought in by the extra. The train continues to Columbus with a 3,900-ton train, without further break in tonnage. Thus the delay of using helper service over Sylacauga grade is avoided.

All other through freight trains are operated out of East Thomas yard with 2,000 tons and fill out to 4,000 tons at Winburn yard. The additional tonnage for such fill-outs is brought into Winburn by the switch-locomotives that serve the industrial area and includes, in addition, coal from the Margaret branch, also brought in to Winburn by switch-locomotives. These trains require helpers over Sylacauga grade.

As stated, 1,900-ton trains may be operated westbound from Columbus to Birmingham, but, except during severe weather, these trains usually handle 200 or 300 additional tons as far as Vincent. This tonnage is picked up and handled into Birmingham by the engine and crew of the train previously mentioned as taking 2,000 tons from East Thomas to Trammels ahead of No. 38. After setting out at Trammels, this engine and crew return westbound 23 mi. to Vincent to pick up the set-out tonnage there for handling westbound back to Birmingham, also picking up at Chilbersburg and Sylacauga en route. All through westbound freight trains by-pass Winburn yard. By these operating methods, the maximum tonnage possible is handled over this district without delays. Most of the

through freight trains are handled by 2-10-2 type locomotives with a tractive effort of 73,829 lb.

Delays in the Columbus terminal are minimized by modern facilities and lay-out. A modern stock-pen with six open and six roofed pens and with feeding and watering facilities, as well as a mechanized ice-dock, have both been built new in this terminal within the past two years. The relative positions of pens and the ice-box are such that, on Train No. 38, for example, livestock requiring care at the pens is blocked at the head end and cars requiring re-icing, at the rear. The rip track, the transfer platforms and sheds and the enginehouse are also conveniently located for rapid handling of cars through the terminal.

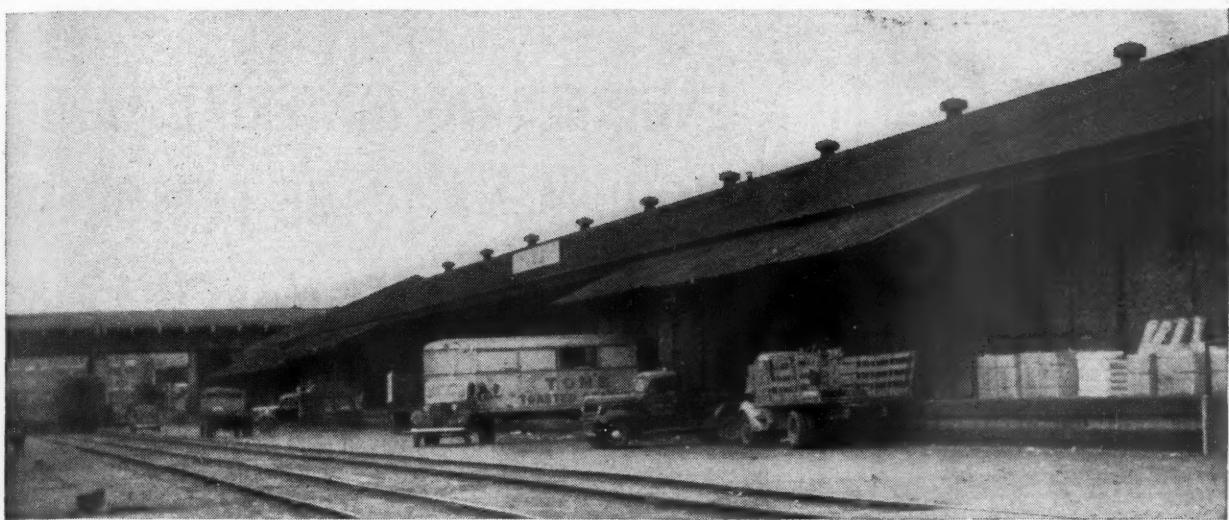
On the Columbus-Andalusia line, 2,500-ton trains are operated as through trains as far as Union Springs, Ala., 55 mi., where they are turned over to the Macon division for operation on into Montgomery, Ala. Between Union Springs and Andalusia, only local freight trains are operated.

Between Cedartown, Ga., and Chattanooga, hilly country necessitates tonnage adjustments. Southbound, the railway climbs over Missionary ridge between Chattanooga and Chickamauga, Ga., 13 mi., the tonnage handled being 1,375 tons. However, a switch-local which serves the Chattanooga industrial area and also a coal mine on the Durham branch brings sufficient tonnage into Chickamauga so that trains usually may be filled out to the 1,675 tons that can be handled from that point to Rome, Ga. 64 mi. From Rome to Cedartown, 19 mi., a long grade is encountered at Relay hill which would make a tonnage reduction to 1,400 tons necessary, except that the hill is normally doubled. Northbound, from Cedartown to Rome, a short grade on the opposite side of the same hill would hold the tonnage down to 1,475 tons, as compared with 1,650 tons from Rome to Chattanooga. The normal operation is to haul 1,800 tons from Cedartown; double Relay hill; and, since Rome is a good-size city, to set out cars destined there so as to reduce to the tonnage limit from Rome to Chattanooga.

Advantages and Disadvantages

Since a sizable part of the traffic on the Columbus division consists of through traffic obtained from connections at Birmingham or Chattanooga and delivered to the Macon division at Columbus, Americus or Griffin, the division possesses certain advantages in so far as the production of miles per car per day is concerned. To offset, however, a number of local freight trains are operated, with attendant slower movement of cars, and there is considerable branch-line service. Another deterrent factor is that about 150 coal cars are operated on the Margaret branch in shuttle service between the mines and the coal washer, being returned to the mines after their load has been dumped into the washer. It is impossible to accumulate more than a few miles per day, six days a week, for any of these cars but they are, of course, included in the statistics for the division.

The city of Columbus has the second-largest textile mill industry, measured in spindles, in the South, and the surrounding territory also has a large number of textile mills. Cars from such mills are brought into the transfer at Columbus from all directions to be



There's plenty of tailboard space for trucks at the Columbus, Ga., freighthouse

consolidated and put into through cars for destinations all over the country.

The freight station, warehouse and transfer facilities at Columbus, like all other facilities in that terminal, are conveniently located. The track facilities on which the cars are spotted for I.c.l. loading consist of two tracks holding 35 cars each, one track holding 32 cars and one track holding 22 cars, or a total car-spotting capacity of 124 cars. Since these tracks are located immediately adjacent to the main yard at Columbus, one of the yard tracks can also be used for spotting cars in an emergency or if the business expands to such an extent as to justify its permanent use.

In 1946 the Columbus agency handled 186,579 tons of I.c.l. freight, an increase of 12,691 tons over 1945, and the largest business on record for any one year. This was handled with a total of 185,698 man-hours. Since the efficiency of a station can be measured to a considerable extent by its safety record, it may be mentioned that there was not a single reportable personal injury at the Columbus agency in 1946. Of the total of 342,051,293 lb. loaded that year, 196,503,722 lb. were loaded to break bulk on lines beyond the C. of Ga.

An average of 14 trucking crews normally handle the work of the station. Of these, one crew also handles the icing dock when it is necessary to re-ice car-loads of perishables moving through Columbus. The crews are staggered, reporting at 7:30 a.m., 8:00 a.m.; 8:30 a.m., and 8:45 a.m. The station is equipped with a Yale lift truck, a Heberd shop mule and an automatic Allis-Chalmers lift bridge. There are, of course, numerous hand trucks, but the use of 80 live skids, with four rubber castors under each, reduces to the minimum the amount of hand-trucking necessary. There are 45 four-wheel floats also in use.

Recordak machines handle the necessary copying of waybills and other documents. The station is also equipped with a Communo-Phone installation manufactured by David Bogen & Co., which permits inter-communication between the offices and the transfer platforms. The agent has a master set on his desk; the chief clerk and the warehouse foreman also have sets on their desks and two-way machines are strategically located along the transfer platforms. Thus,

immediate information can be transmitted back and forth as to when cars are set in the various locations, when they are full and the other data which formerly had to be transmitted much more slowly by messenger.

The freighthouse receiving platform is located immediately opposite the passenger station, which also houses the division offices. It is served by a wide concrete driveway permitting easy access to the truck unloading platforms. The pick-up and delivery service for the railway in Columbus is handled under contract with a drayage concern. As the shipments are received, they are tabbed under a system of flagging which readily permits a trucker going to a distant car to see if there is any freight on the receiving platform for that or adjacent cars. This system avoids much empty movement of the power and hand trucks.

The set-up at the 124 car locations along the transfer platforms has been studied carefully by the agent and his supervisors, in conjunction with the general yard-master, to facilitate classification and hold switching to the minimum as the I.c.l. cars are placed in outbound trains after being loaded. All cars arriving at the transfer before noon for consolidation and forwarding are unloaded the same day and their contents go forward the same evening in outbound trains.

On February 12, 1947, the Columbus transfer forwarded 46 cars of outbound freight, or 1,181,922 lb. of I.c.l. freight, with an average weight per car of 25,694 lb. Of this 737,538 lb. was loaded in cars which would break bulk on foreign lines, cars being forwarded to such distant points as Los Angeles, Cal., Dallas, Tex., New York and Cedar Hill Transfer, Conn. The inbound I.c.l. freight handled amounted to 123,995 lb. Most of the outbound freight consisted of textiles and peanut products, such as peanut butter and peanut candy.

Textiles vary widely in weight; it is impossible, for example, to get 20,000 lb. of blankets into even the largest cars. However, on this particular day, the transfer loaded two cars with more than 40,000 lb. each and six cars with more than 30,000 lb. The day's operations were conducted with labor amounting to 550 man-hours, or an average per man-hour of 1.19 tons.



C. L. Mellor

ENGINEERING MATERIALS AND EQUIPMENT TO BE FEATURED AT CHICAGO, MARCH 15-18

At 9:00 a.m. on March 15, the doors of the International Amphitheatre in Chicago will swing open on the thirty-ninth annual exhibition of the National Railway Appliances Association, to be held as a part of Railway Engineering Week in Chicago, in conjunction with the annual meeting of the American Railway Engineering Association.

Here, for a full day preceding the A.R.E.A. meeting—which does not begin until Tuesday morning—

and extending until mid-afternoon Thursday, 101 manufacturers, occupying a total of 218 booths in the spacious arena and north wing of the Amphitheatre, will display their wares in what promises to be the most comprehensive exhibit ever held of equipment, appliances and materials designed for use in the construction and maintenance of the various elements making up the fixed properties of the railways. Railway officers from all sections of the United States, Canada and Mexico, as well as from abroad, will have an opportunity to see the latest developments in materials and equipment designed specifically to meet their requirements, and to discuss their problems first-hand with the suppliers and builders.

Exhibitors

Achuff Railway Supply Co.
Air Reduction Sales Co.
Allied Chemical & Dye Corp., General Chemical Div.
Allis-Chalmers Mfg. Co.
American Fork & Hoe Co.
American Hoist & Derrick Co.
Armco Drainage & Metal Products, Inc.
Austin-Western Co.
Barber-Greene Co.
Barco Mfg. Co.
Bernuth, Lembcke Co.
Buda Co.
Caterpillar Tractor Co.
Chicago Pneumatic Tool Co.
Chipman Chemical Company
Crerar, Adams & Co.
Cullen-Friestadt Co.
Dearborn Chemical Co.
Henry Disston & Sons, Inc.
Duff-Norton Mfg. Co.
Duncan Wire Stretcher Co.
Eaton Manufacturing Co.
Electric Tamper & Equipment Co.
Encyclopedia Britannica
Eutectic Welding Alloys Corp.
Fabreeka Products Co.
Fairbanks, Morse & Co.
Fairmont Railway Motors, Inc.
Harnischfeger Corporation
Hayes Track Appliance Co.
Hobart Bros. Co.
Hubbard & Co.
Independent Pneumatic Tool Co.

Industrial Brownhoist Corp.
Ingersoll-Rand Co.
Insley Manufacturing Corp.
International Harvester Co.
Johns-Manville Sales Corp.
O. F. Jordan Co.
Joyce-Cridland Co.
Kalamazoo Manufacturing Co.
Kershaw Co., Inc.
Koehring Co.
Koppers Co.
Lehon Co.
LeRoi Co.
Littleford Bros., Inc.
Locomotive Finished Materials Co.
Magnus Chemical Co.
Maintenance Equipment Co.
Mall Tool Co.
Marvel Equipment Co.
Master Builders Co.
Mid-West Forging & Mfg. Co.
Modern Railroads
Monroe Railway Appliance Co.
Morden Frog & Crossing Works
Morrison Railway Supply Corp.
Murdock Mfg. & Supply Co.
National Aluminate Corp.
National Lock Washer Co.
Nichols Engineering Co.
Nordberg Manufacturing Co.
Oxweld Railroad Service Co.
P. & M. Co.
Pettibone Mulliken Corp.
Philadelphia Steel & Wire Corp.
Pittsburgh Pipe Cleaner Co.

Pocket List of Railroad Officials
Pullman-Standard Car Mfg. Co., Power Ballaster Div.
Punch-Lok Co.
Racine Tool & Machine Co.
Rail Joint Co.
Rails Company
Railroad Accessories Corp.
Railroad Equipment Magazine
Railroad Products Co.
Railway Age
Railway Maintenance Corp.
Railway Maintenance Devices Co.
Railway Purchases & Stores
Railway Track-Work Co.
Ramapo Ajax Div., American Brake Shoe Co.
Reade Mfg. Co.
Ric-Wil Co.
Rodgers Hydraulic, Inc.
Rust-Oleum Corp.
Schramm, Inc.
Sperry Products, Inc.
Taylor-Colquitt Co.
Teleweld, Inc.
Templeton, Kenly & Co.
Thornley Railway Machine Co.
Timber Engineering Co.
Union Metal Mfg. Co.
Unit Crane & Shovel Corp.
United States Steel Corp.
Warner & Swasey Co.
Western Railroad Supply Co.
Woodings-Verona Tool Works
Woolery Machine Co.

For the convenience of those attending the A.R.E.A. annual meeting in the Palmer House, free bus service on a 10-minute schedule will be provided by the N.R.A.A. between the convention hotel and the Amphitheatre, and the exhibits will remain open until 6 p.m. each evening. Furthermore, ample dining facilities are being provided at the exhibit for those who may desire to use them.

The plans for the exhibit are being carried out under the direction of C. L. Mellor (Barco Manufacturing Company), as president of the N.R.A.A., and R. B. Fisher (Buda Company), in his capacity as secretary of the association, director of exhibits, and chairman of the association's Exhibit committee. The companies that will be represented in the exhibit are listed in an accompanying tabulation.

THE REAL VALUE OF M. OF W. EQUIPMENT

(Continued from page 52)

way without a special permit granted by the state highway department. To overcome the length of time normally required to secure such a permit, arrangements have been made with the state highway department whereby we may, when the equipment is required in emergency, move it over the highway without a permit—and make within the following 24-hr. period the usual formal application. One state has cooperated to the extent of offering to have highway patrolmen on motorcycles meet the equipment at the state line and to escort it to the point of emergency if we will notify the state police where the equipment will enter the state and the approximate time of its arrival at the state line.

All of this procedure, on first thought, may appear to involve a lot of detailed planning and work. It does—but it saves time and the expenditure of a large amount of money that would otherwise have to be spent if detailed planning was not carried out in advance.

I have tried to emphasize the difference between the *book* value of work equipment and roadway machines as compared with their *real* value. Will you agree that the *book* value is a fixed and definite figure in dollars and cents, while the *real* value will be lowered or raised in proportion to the planning and consideration you, as supervisory officers, give to your job?

drawn, 355 decided without a referee, and 347 decided

Among the referees employed by the Adjustment Board divisions during the year was John Thad Scott, Jr., attorney of Houston, Tex., whose appointment by President Truman to membership on N. M. B. is pending in the Senate. Mr. Scott received a total of \$3,527.50 for 70 $\frac{3}{4}$ days of work at \$50 per day. Another referee was George A. Cook, whose resignation in June, 1946, left vacant for more than 1 $\frac{1}{2}$ years the N. M. B. membership for which Mr. Scott has now been nominated. Mr. Cook received a total of \$1,512.50 for 30 $\frac{3}{4}$ days work. The largest amount paid to any of the year's referees went to Sidney St. J. Thaxter, justice of the Supreme Court of Maine, who received a total of \$5,337.50—\$4,050 for 81 days on First Division cases and \$1,287.50 for 25 $\frac{3}{4}$ days on Second Division cases.



"Tartan girl" Norma Yates offers a special serving of suntan lotion to passengers of the Seaboard Air Line's "Silver Meteor" as the streamliner pulls into Miami, Fla.

MEDIATION BOARD REPORTS ON FISCAL 1947

(Continued from page 55)

"In addition, the carriers and the brotherhoods should endeavor to agree upon procedural changes in the work of the First Division as a means of expediting settlement. . . . The railroads and brotherhoods must exert constant diligent efforts to arrive at a solution of this most pressing problem. If they fail to exert such efforts or fail to agree on a workable program to correct the present unhealthy conditions, it appears to be inevitable that the remedy will lie with the Congress."

The more detailed account of Adjustment Board activities which appears in an appendix to the report reveals that the First Division ended the fiscal year with a backlog of 2,423 pending cases. During the year it disposed of 1,442 cases, including 740 which were with-

L. M. S. INSTALLS MAIN-LINE DIESELS

3,200-hp. British locomotive will compete with new steam Pacifics fitted with roller bearings, rocking grates, and hopper ash pans

By **E. C. POULTNEY**
M. (British) Inst. Loco. E.

The locomotives forming the subject of this article have recently been built by the London, Midland & Scottish for main line working, and embrace a 1,600-hp. Diesel-electric unit No. 10000—the first of two to be constructed and notable as being the first of this type to be introduced on a British railway for main-line traffic—and a Pacific steam locomotive, the first of two to be completed, which while generally similar to other four-cylinder 4-6-2 express passenger locomotives now in service, differs in certain important respects, including as it does features specially incorporated to enable it to run in competition with the new Diesel-electric locomotive. These comparative trials will be carried out when the further identical Diesel unit is completed, thus enabling the two to be coupled together to provide a 3,200-hp. locomotive, comparable in this respect to the Pacific steam locomotives.

Both locomotives have been constructed to designs prepared by H. G. Ivatt, chief mechanical engineer, London, Midland & Scottish, in the company's shops, the Diesel-electric at Derby, and the steam locomotive at the Crewe Works. The English Electric Company is responsible for the Diesel engine and the electrical equipment for the two Diesel-electric locomotives.

The design of the Diesel locomotive was carefully considered in order to give the widest scope to the experiment so that it could be tried out on a large range of traffic duties. Accordingly, it was decided that two 1,600-hp. units should be provided, each able

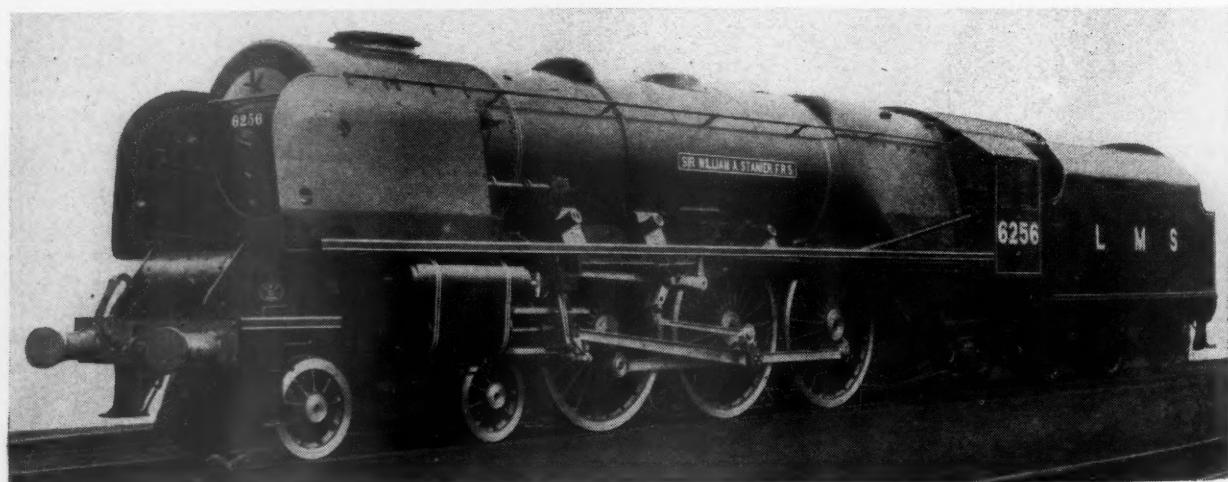
to deal with a range of both passenger and freight duties while, when coupled together, a locomotive will be obtained capable of working the heaviest express passenger services on the Western division of the L.M.S. system between London (Euston) and Glasgow (Central), a run of 401 miles. When in due course the Diesel is put on this service it will then be operated in competition with the two new Pacific type steam locomotives.

Diesel-Electric Locomotives

In designing the Diesel locomotive two major problems presented themselves, one of which was arranging the large Diesel engine with its attendant electrical apparatus in a sufficiently commodious cab which would suit the standard clearances. Weight considerations made it desirable to carry the locomotive on two six-wheel trucks. As it was desired to mount a traction motor on each of the three axles, an additional design problem presented itself in finding the space required for the motors driving the center axles.

The main framing is of the fabricated type designed so as to limit the height of the locomotive and provide a strong support for the Diesel engine and the electric generator with the auxiliary equipment.

The six-wheel trucks, spaced at 35 ft. 6 in. centers and each standing on a wheel base of 15 ft. 8 in., have 42-in. rolled-steel wheels with separate tires. The frames are built up from fabricated assemblies and



The 4-6-2 passenger locomotive

have side members of the sandwich pattern. Equalizing-spring beams resting on the tops of the journal boxes are arranged between the inner and outer frame plates. The journal box guides are fitted with renewable manganese liners.

For good riding it was considered desirable to use the bolster type of truck. As usually designed with a stiff center member connecting the two bolsters required for a six-wheel truck, it would not have been possible to find space for the traction motor for the center axle. For this reason the trucks have been fitted with bolsters adapted to carry the weight themselves at four points through sliding surfaces, so that the longitudinal member connecting the two bolsters carrying the center pivot does not take any of the load, and the pivot centers are therefore only required to deal with location and traction forces. The lighter connecting member makes it possible to provide room for the motor on the center axle.

The bolsters rest on springs of the laminated type. The journal boxes are equipped with Timken roller bearings. They have manganese liners and are also provided with side-projecting lugs pressing against spring-loaded pads on the truck framing. These cushion any excessive side thrusts which might be transmitted from the wheels. Sandboxes are fitted at each of the four corners of the frame, sanding the leading and trailing wheels by compressed-air sand ejectors. The automatic vacuum brake operates brake shoes on all wheels through rigging fitted with slack and adjusters. There are four 21-in. vacuum brake-cylinders mounted under the engine main frames, together with the battery containers. There is also a hand brake.

The Power Plant

Power is provided by a 16-cylinder V-type four-cycle turbo-charged Diesel engine directly coupled to a direct-current self-ventilating single-bearing generator. The engine has a 12-hour B.S.I.* rating of 1,600 bhp. at 750 rpm. The cylinders are 10 in. diameter by 12 in. stroke and are arranged in two banks

* British Standards Institute.

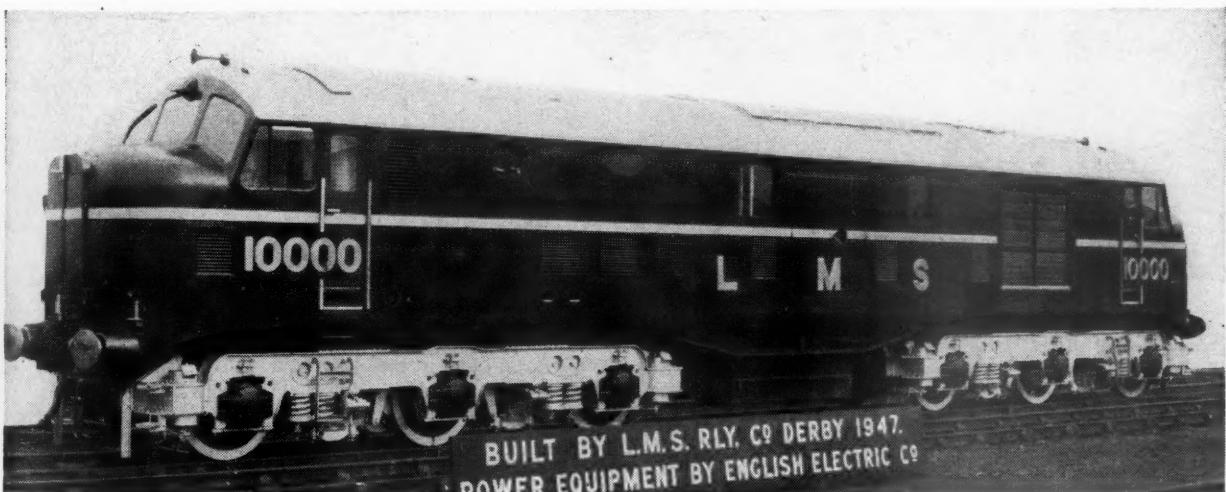
of eight and drive on an eight-throw crank shaft, two connecting rods working on each crank pin. There are nine main bearings of the sleeve type white-metal lined, having steel shells.

The cylinders are water cooled and in each cylinder head there are two valves, one inlet and one exhaust with a centrally placed fuel injector. The aluminum pistons have three compression and two scraper rings and fully floating wrist pins. There are individual fuel pumps for each cylinder; these and the valves are operated by roller followers running on cams mounted on two cam shafts. The cams are separately attached to the shafts and run in oil baths. The cam shafts are driven from the fly-wheel end by spur gearing and a triplex roller chain arranged in the crank-case casting. There are four exhaust-gas turbochargers, each one serving four cylinders. These have self-contained automatic lubricating systems which are independent of the engine lubricating equipment.

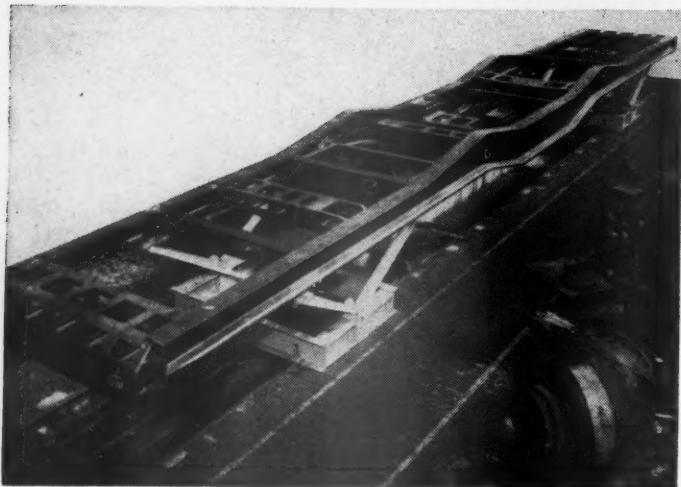
The engine governor is driven by one of the cam shafts; it regulates the fuel pumps by means of a servo piston operated from the lubricating-oil system. It controls the engine at all speeds and automatically stops it in the event of any failure in the lubricating system. An over-speed trip automatically stops the engine if a predetermined speed is exceeded. The turbocharger air delivery pressure operates a fuel-limiting device which automatically reduces the maximum power which can be developed by the engine if the pressure falls due to the failure of the turbocharger.

Combustion air for the engine is drawn in through louvers in the sides of the body; this passes through filters and is led directly to the superchargers. Radiators are also placed in the body sides consisting of headers for oil and water cooling. The radiator fan is placed in the roof over the engine, drawing air through the cooling elements and exhausting through a grill in the roof.

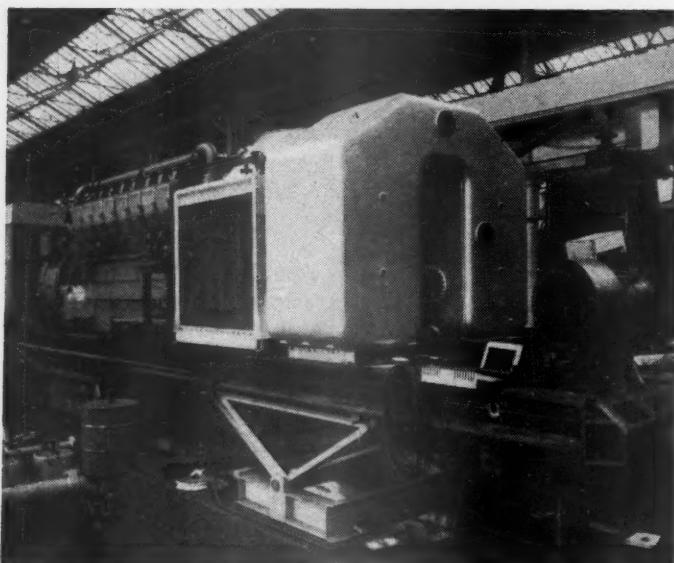
The main fuel tanks are placed across the locomotive and the service tank is fabricated into this structure above the main tank. There is a central passageway through the tank to give access through the locomotive. At the opposite end of the engine room there is a bulkhead with airtight doors in order to provide a clean



L. M. S. main-line Diesel-electric locomotive No. 10000



The Diesel-electric locomotive underframe



Above—Main frames with traction-motor blower, fuel tank, radiator, engine-control cubicle and boiler water tanks. Below—A complete motor truck



air compartment in which the main electrical equipment is housed. The generators project into this space, from which they draw their air supply. The auxiliary generator is mounted over the main machine. The auxiliary equipment consists of two traction-motor blowers, and the radiator-fan motor. The auxiliary generator supplies current for the control circuits, for battery charging, for the motor-driven compressors,

exhausters for the vacuum brake, the motors for the blowers and for locomotive lighting.

There are six d.c. series-wound reversible force-ventilated nose-suspended traction motors. They drive through single reduction gearing and are connected in three parallel groups, each group consisting of two motors permanently connected in series. The starting of the engine is accomplished by motoring the main generator by current furnished by a lead-acid battery which also serves for locomotive lighting and to supply power to the control circuits until the engine is started.

With the exception of the master controller which is mounted in each cab, the control equipment, consisting of electro-magnetic and electro-pneumatic contactors, relays and reverses, is placed in the generator compartment. The master controller includes the main control handle, the reverse lever and the switch for starting and stopping the Diesel engine. After the reverser and main switch are set the driver has full control of the locomotive for speed and power by one handle. There is a full set of instruments in each cab, in the engine room, and in the compartment containing the electrical equipment.

Steam for train heating is provided by a Clarkson thimble-tube oil-fired boiler.

A driver's cab is placed at each end of the locomotive, fitted with adjustable cushioned seats, electric heaters, wind-screen wipers, defrosters and sun blinds, also the sanding and horn valves. A deadman's treadle is included. Dashboards with indirect lighting for the various instruments give the crew information as to the working of the engine and the electrical equipment. In addition to the operating valve for the vacuum brake, there is a hand-brake wheel in each cab. The body of the locomotive, including the two cabs and the roof, are sprayed with asbestos inside to reduce noise and for insulation purposes. The roof has hinged doors to enable the cylinder covers and pistons to be withdrawn as required for examination.

The first of the two new Pacific type four-cylinder locomotives has been appropriately named after Sir W. Stainer who was chief mechanical engineer of the railway during 1942-1944, and who was responsible for the initial design in 1928. The engines now under notice have been equipped with special features introduced with the idea of obtaining increased availability and reduced maintenance costs. These include roller bearings on all engine and tender axles and labor-saving devices such as rocking grates, hopper ashpans and self-cleaning smokeboxes. The L.M.S. has already had extensive experience with roller-bearing journal boxes on the non-condensing turbine engine No. 6202 built in 1935, which is fitted with bearings of this type for the coupled axles and leading truck, and beyond this several tenders have also been thus equipped.

Rocking grates, hopper ashpans and self-cleaning smokeboxes, though uncommon in normal British practice, have been increasingly installed on L.M.S. locomotives during the last few years with satisfactory results. The provision of this extra equipment is expected to facilitate the operation of these new 4-6-2 locomotives, reduce the time required to turn them and so bring them into line in this respect with the Diesel-electric locomotive. The two locomotives have Timken cannon-type journal boxes for the leading truck and

for the intermediate and trailing coupled axles. For the leading axle, however, which is a crank axle taking the drive from the center pair of cylinders, a special form of roller-bearing assembly is required, and that used is of the S.K.F. self-aligning type. The Timken bearing assemblies as fitted in the journal boxes for the trailing truck and for the six-wheel tender interchange with others already in use.

Compared with the earlier engines of this class, a further innovation has been made in the design of the two-wheel trailing truck which is generally similar to the Delta type inasmuch as it has outside cast-steel framing carrying the journal boxes and bearing springs and incorporating the pivot center. The truck takes the weight through sliding bearings, one at each of the rear corners and centering is by means of coil springs also arranged at the rear end of the truck. This design has been adopted in order to provide more space for the hopper-type ashpan, together with improved accessibility to the inside of the firebox.

The boilers are as originally designed and have the same number of tubes and flues, but the heating surface of the Type A superheater has been materially increased by the use of a modified arrangement of superheater elements known as the Type 5.P.4.

The locomotives of this class have four 16½-in. by 28-in. cylinders, the two outside driving the intermediate pair of wheels while the inside pair, placed forward over the leading wheels of the engine truck, connect with the leading wheels by means of a built-up crank axle.

The 9-in. piston valves are operated by two sets only of Walschaerts gear by driving the inside valves through horizontally placed rockers coupled to the outside valve gears, an arrangement made possible by the placing of the adjacent outside and inside crank pins on opposite centers. The outside and inside main rods are 11 ft. 0 in. and 8 ft. 6 in. between centers, respectively. The main and coupling rods are of heat-treated alloy steel and all the axles are hollow bored.

The care taken in designing the motion coupled with the crank arrangement has resulted in very low rail impact values so that at 480 r.p.m., 115 miles an hour with the 81-in. wheels, the hammer blow is only 7,000 lb. per wheel.

In common with the latest L.M.S. practice these engines have twin blast pipes and double chimneys. This is found to improve the efficiency of the exhaust jets and therefore to reduce cylinder back pressures.

In accordance with standards the equipment includes a live-steam and an exhaust-steam injector delivering through a top feed. There are steam sanders, the vacuum automatic brake apparatus for the train, and steam brakes acting on the engine and tender. A screw gear, hand operated, controls the valve gear.

The tenders are equipped with a coal pusher, steam operated, and water pick-up scoop with hand-gear operation. The tenders for engines of this size are relatively small. On the other hand, large tank capacity is not required as the line is amply provided with track troughs and 22,400 lb. of coal is adequate for a through run of 400 miles.

The trains normally handled range from 450 to about 500 tons or a little over, when they would be made up with from 15 to 17 coaches, according to the number of dining cars or sleeping cars included.

General Characteristics of the London, Midland & Scottish 1,600-Hp. Diesel-Electric Locomotive

Type of engine	16-cyl., 4-cycle, V-type with turbo-superchargers	10 x 12
Cylinder diameter, bore, and stroke, in.	6-6-0	
Wheel arrangement	0-6-0	
Brake horsepower	1,600 at 750 r.p.m.	
Tractive force, max., lb.	41,400	
Gear ratio	55/18	
Brake power, per cent:		
Vacuum	70	
Hand	37.5	
Adhesion factor	6.57	
Overall dimensions, ft.-in.:		
Height (roof)	12-11 5/16	
Width over cab	9-3	
Length over buffers	61-2	
Wheel bases, ft.-in.:		
Truck	15-8	
Total	51-2	
Truck wheels, diameter over tires, in.	42	
Fuel capacities, U. S. gal.:		
Main engine	979	
Service engine	102	
Heating boiler fuel oil	156	
Water capacities, U. S. gal.:		
Radiator header	48	
Heating boiler feedwater	961	
Maximum track curvature, deg. (approx.)	19.5	
Weight, lb.:		
Locomotive, each axle	45,360	
Total, in working order (est.)	272,160	

General Dimensions and Weights of the London, Midland & Scottish 4-6-2 Type Express Passenger Locomotive

Builder	L.M.S.
Date built	1947
Cylinders, number, diameter, and stroke, in.	4-16½ x 28
Valve gear type	Walschaerts
Valves, piston, diameter, in.	9
Maximum travel, in.	7½
Steam lap, in.	1¾
Exhaust clearance, in.	1¾
Lead, in.	¾
Cut off in full gear, per cent (approx.)	75
Rated tractive force, 85 per cent, lb.	40,000
Dimensions, ft.-in.:	
Height to top of stack	13-2
Height to center line of boiler	9-6
Cylinder centers (outside pair)	7-0
Width engine, max.	8-11½
Wheel base, ft.-in.:	
Driving	14-6
Rigid	14-6
Engine, total	37-0
Engine and tender, total	62-11
Wheels, diameter outside tires, in.:	
Driving	81
Front truck	36
Trailing truck	45
Weights in working order, lb.:	
On drivers	152,544*
On front truck	48,832*
On rear truck	36,960*
Total engine	238,336*
Tender (fully loaded)	127,232
Boiler:	Belpaire
Type	250
Steam pressure, lb. per sq. in.	68½
Diameter first ring outside, in.	77½
Diameter largest outside, in.	102
Firebox, length outside, in.	129-2½
Tubes, number and diameter, in.	40-5½
Flues, number and diameter, in.	19-3
Length between tube plates, ft.-in.	50
Grate area, sq. ft.	
Heating surfaces, sq. ft.:	
Firebox and comb. chamber	230
Tubes and flues	2,577
Evaporative, total	2,807
Superheater	979
Combined evap. and superheater	3,786
Tender:	
Type	6-wheel
Water capacity, U. S. gal. (approx.)	4,800
Coal capacity, tons (2,000 lb.) (approx.)	11
Boiler proportions:	
Firebox heating surface + grate area	4.6
Comb. heating surface + grate area	75.7
Superheater heating surface, per cent comb. heating surface	24.8
Tractive force + grate area	800
Weight on drivers + engine weight, per cent	64.1
Weight on drivers + tractive force	3.82
Weight of engine + comb. heating surface	60.3

* Estimated.

Longer trains can be hauled but could not be conveniently handled at the stations.

The dimensions and leading particulars of the Diesel and steam locomotives are given in the tables.

THE CHALLENGE TO AMERICAN MANAGEMENT

(Continued from page 46)

only 26 per cent—going back to causes—have ever tried any medium for the discussion of wages in their relation to profits. Consider a list of the topics on which employees and the public can be informed. This list also is literally too long to read. It includes over 70 items, some of them as basic as profits and all of them worthy of discussion. How many managements cover this list consistently? Does any management do so?

It is an old story. When industry encounters a problem, one management does some things, another management does other things, a few managements do nearly everything, and many managements do nothing. Slowly, however, as results are demonstrated, action becomes general. We can hope for this in the case of the communication of industrial information. Meanwhile we had better be asking ourselves some searching questions:

Question One. *Are we doing enough?* Not while 35 million people remain unconvinced of the merit of our system. Not while only one worker in five gets any facts at all about profits and wages.

Question Two. *Whose responsibility is it?* Yours, I think, and mine. Management needs the technicians of human relations to help get the job done. It must give them full functional recognition at top levels and a voice in policy. But the problem is not solved by putting a box in an organization chart. Top management must actively support improved communications until every member of the team, up and down the line, is asking questions and getting and giving answers.

In industry, as in sports, the best players are those that know the score. They are on the team—not just with it. And the best "fans" are the best-informed.

Question Three. *Are we being frank?* A half-truth or a distortion of fact has a way of coming back and slapping its authors in the face.

Question Four. *Are we being lucid—crystal clear?* Need statements about "private enterprise" sound as though they were prepared by certified public accountants and edited by engineering specifications writers? We need not talk down to people. But business terms are jargon and require interpretation. "Fixed assets" really means "the tools with which we work." "Capital expenditures" really means more jobs and better products for people. "Earned surplus" means, in reality, the previous earnings of a business retained for its expansion and development—in other words for the security of people. Let us say so plainly. And let us not lose sight of the old proverb, "One picture is worth a thousand words."

Question Five. *Are we bold enough?* Keeping its dignity, hedged around by legal fears, management rarely hits back when hurt in print. The critics of industry cavort in the front page headlines while businessmen address each other in well-weighed words on Page 34. One need not advocate harum-scarum tactics to suggest that we look some of our cherished taboos squarely in the eye.

For example, management spends some \$30 million a year on employee publications. It has been a sort of

unwritten law that controversial questions—labor relations especially—are not to be discussed in the company prints. The Goodyear Tire & Rubber Co. questioned this rule. It started a front-page column, frankly and factually discussing the pros and cons of in-plant labor problems. The results, in terms of better understanding have been excellent.

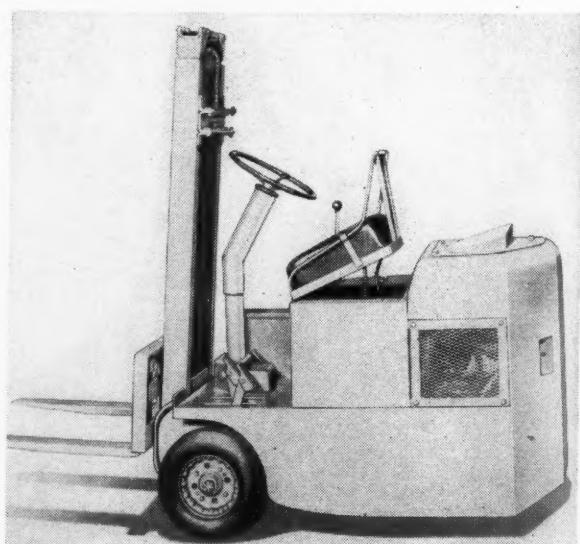
Question Six. *How great is the faith we profess in the American system of individual liberty, economic enterprise, and political democracy?* Are we willing to put time, effort, and money into the task of vindicating ourselves before a questioning public? We know what we have got to lose. Let us see what we have got to gain.

For one thing, if we could re-establish in millions of minds the connection between cause and effect—effect and reward—we would gain vastly in industrial production and economic stability. If every American had agreed on the merits of our system, would we have lost 211 million man-days of production through strikes in the four critical years just ended? Would systematic restrictions on production be possible? Industrial engineers agree that individual productivity can be increased up to 50 per cent by cooperative worker attitudes. But such attitudes originate in management attitudes of confidence and candor while non-cooperation has its roots in lack of understanding and fear.

Speaking bluntly, a petition in receivership has been levelled against American management by a substantial minority of our people. Will the hearing find us bankrupt in the qualities of leadership? I think not. But that is the challenge to the management of American industry.

INTERCHANGEABLE PARTS FEATURE BUDA EQUIPMENT

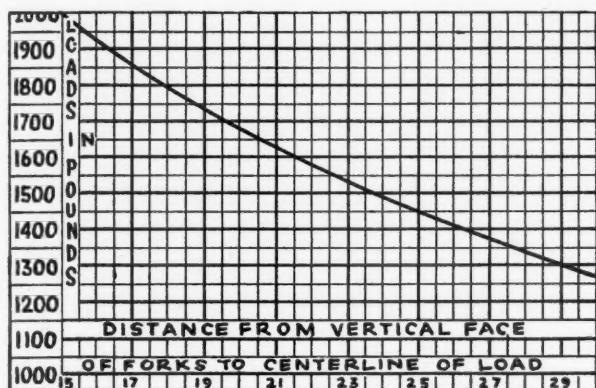
Announcement of the addition of a gas-engine powered fork truck to its line of materials handling equipment has been made by the Buda Company of Harvey,



The Buda "Thrifty Lift" 2,000 lb. capacity truck

III. One of the outstanding features claimed for this truck is the interchangeability of most of its wearing parts with those of the Buda tractor and the model FH platform truck. The opposed twin-cylinder, 10-hp. Onan engine is common to all these models, thus making possible one stock of parts for these three vehicles. Brakes, transmission, clutch, sprocket and chain mechanism also are identical on the equipment mentioned, and in addition are common to the B, HB, and FF models of platform truck.

Overall dimensions of the new "Thrifty Lift" are:



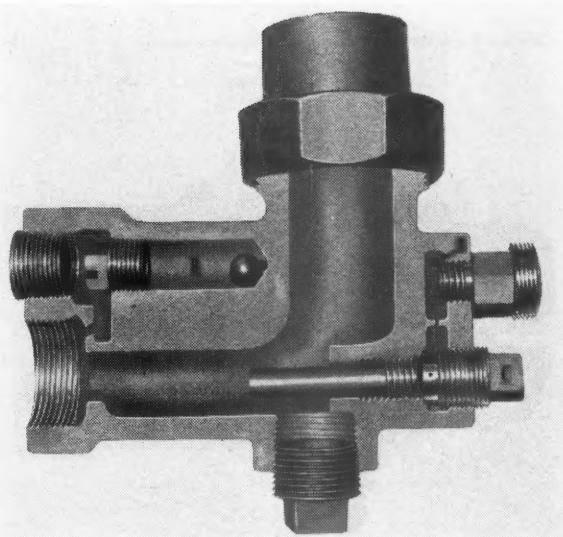
length, 63 $\frac{1}{2}$ in., minus forks; and width 32 in. Its net weight is 3,100 lb., while maximum speed is said to be 10 m.p.h. The lift mechanism is hydraulic and standard forks are 30 in., with 24 in. forks as optional equipment. Lift heights of 7 ft., 8 ft., or 9 ft. are available. Load capacity of this truck is stated as 2,000 lb., when the center line of the load is 15 in. from the vertical face of the forks (See chart.) Forks can be tilted 10 deg. forward and 5 deg. backward. The outside turning radius is given as 58 in.

The transmission is of the automotive type and four speeds forward and the same number in reverse are possible. Motion from forward to reverse is changed simply by the use of the clutch pedals, without touching the gear-shift lever.

SAND TRAP

A sand trap featuring automatic cleanout of the sand delivery pipe, simplicity of operation and ease of maintenance has been developed by the Morris Brewster Company, 8 South Michigan avenue, Chicago 3. The trap requires but one air line and contains no springs, relay valves or valves which require grinding of the seats. Operation is independent of variations in air pressure, full measure of sand being delivered to all points with a locomotive air pressure anywhere between 90 and 140 lb. per sq. in.

Turning the valve in the cap begins the combined cleaning and sanding cycle. Air at full line pressure enters chamber A through the air line connection. Leading from the chamber are two openings. One, which is quite small, leads vertically downward to the nozzle through which the air flows to move the sand. The other is considerably larger, and, virtually the entire amount of air leaving chamber A flows through



The Brewster sand trap features automatic cleanout of the sand delivery pipe

this port which runs horizontally around the sand entry pipe into chamber B. This flow of air into and through chamber B continues for a brief interval until the velocity forces the steel ball against the opening in the threaded discharge member. It is this cleanout air which flows from the time the cap valve is opened until the steel ball shuts off the exit that provides the automatic cleaning action.

As the exit for air entering the large port is now closed, the air under pressure in chamber A flows down through the smaller vertical port through the opening in the throttle plug, C, and on into the nozzle. This air flowing through the nozzle moves the sand which has entered the trap through the large main opening from the top and is lying at an angle across the discharge side of the nozzle.

The flow of sand in pounds per minute is set at the terminal and is beyond the control of the engineman. It can be varied from a minimum of $\frac{3}{4}$ lb. per min. to a maximum of 6 to 10 lb. per min. The threaded nozzle has a slot for adjustment by a screw driver. Turning the nozzle further in reduces the flow of sand as there is less sand ahead of the flow of air. One complete turn varies the sand flow approximately 1 lb. per min. The throttle plug, C, is a separate piece from the nozzle. It is threaded for easy removal when adjustment of the nozzle is desired and to permit it to be secured tightly against its seat to restrain the air to flow from chamber A to the nozzle through the small port in the plug. Adjustments to the flow of sand may be made without disconnecting the air line.

The joint at the top of the main pipe where the sand enters the trap is V-shaped for a moisture seal and to help prevent starting the coupling nut cross threaded. Ports within the trap through which sand flows are designed as far as possible to prevent abrasive wear. Sections are constructed to permit some sand to remain in pockets so that the sand which is traveling at high velocity will rub on sand, rather than on the metal. The Brewster sand trap is manufactured with either a horizontal or an angle outlet, and with either a union or a bolted flange.

GENERAL NEWS

Railroad Case Heard by Emergency Board

Carriers assert "hold-outs" not entitled to more than 15½ cents

Proceedings before the President's "fact-finding" board considering demands of the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen & Enginemen and the Switchmen's Union of North America for an increase in pay of 30 per cent, with a minimum increase of \$3 per day, and changes in 25 working rules, as well as 15 carrier-proposed rule changes, were continued during the week of February 22 with the railroads presenting their case.

L. W. Horning, vice-president, New York Central, informed the board that 90 per cent of the nation's railroad workers had been awarded or had voluntarily agreed upon a wage increase of 15½ cents an hour, and that the "hold-out" employee group was the highest paid in the railroad industry. The 9.38 per cent of railroad employees who constitute the engineers, firemen and hostlers, he told the board, receive 12.8 per cent of the total pay. "Every road employee who begins a trip or tour of duty knows that in no event will he be paid less than a basic day's pay. The basic daily rate is in reality the measure of a minimum day's pay but in no sense measures the maximum amount" he can earn in any calendar day or any trip. Mr. Horning pointed out that the dual basis of pay amplifies earning opportunities when wage increases are applied. As an example, he demonstrated that if an engineer received the \$1.24 basic day (15½ cents an hour) increase awarded conductors and trainmen, and "runs 200 miles, which is not unusual in passenger or freight service, he will receive an increase of \$2.48, and if the trip is 300 miles, not unusual in passenger service, the increase is \$3.72 per day." With the proposed rule changes the earning power of many of these employers would be further increased.

Engineers Earnings Cited — Mr. Horning introduced an exhibit entitled "train studies" which contained 92 pages of details of service and earnings of locomotive engineers. One sample, which Mr. Horning discussed, was that of a passenger engineer in assigned service between Buffalo, N. Y., and Syracuse on the New York Central. This engineer runs train No. 40, the "North Shore Limited," eastbound, and No. 57, the "Empire State Express," westbound.

In the month shown (April, 1947), he was on his run a total of 74 hr. 58 min. and on duty a total of 91 hr. 55 min. He was off duty at away-from-home terminals 22 hr. 39 min., and off duty at his home terminal 605 hr. 26 min. He performed duty on 15 calendar days. His earnings were \$464.01, or an average of \$5.05 for each hour on duty. Mr. Horning pointed out that had this engineer been granted a 15½ cent an hour increase, his \$464.01 monthly earnings would have been \$518.68. If the 30 per cent sought for had applied, he would have received \$603.20 for his 15 days' work—on no one day of which did he exceed 7 hr. on duty, or 7 hr. 52 min. actually away from his home terminal.

Mr. Horning extended to the board an invitation to see for themselves how railroad men work, offering to make available for their inspection any railroad facilities.

J. Elmer Monroe, assistant director, Bureau of Railway Economics, testified that, under existing pay schedules and without considering any further increase, "two-thirds of the employees before this board are earning \$300 or more per month, while almost half the group are earning \$350 or more per month. Annual earnings of the engineer, fireman and hostler group," Mr. Monroe continued, "assuming the same increase in pay accepted by other operating employees is applied, would range from \$3,553 for yard firemen to \$6,757 for engineers in local and way freight service."

Dr. Jules Backman, associate professor of economics, New York University, told the board that the output of railroad workers had been declining since 1943, while hourly earnings increased, supporting his testimony with evidence showing that the increase in wages of railroaders has been more than twice as large as the increase in traffic units per man-hour. "It would be a distortion of facts," Dr. Backman asserted, "to suggest that higher total operating revenues reflect greater productivity of these employees" because the higher wages were the cause of increased rates which boosted the gross.

C. L. LaFountaine, general safety supervisor, Great Northern, testified that the steady decline in the accident rate of railroad employees over the last 25 years, interrupted only by World War II, had been resumed and presented I.C.C. statistics showing that there was a 78 per cent decline in the accident frequency rate for all classes of railroad employees during the period 1923 to 1940.

"Tentative figures for the first nine months of 1947," he stated, "show a further decline, indicating that the down-

ward trend which began in 1946 is continuing."

Carriers Can Pay No More—Dr. J. H. Parmelee, vice-president, Association of American Railroads, testified that the situation of the carriers is such that they are not able to pay any wage increase greater than 15½ cents an hour without passing the increased costs on to the public. Dr. Parmelee used I.C.C. data to show that the estimated \$950 million net railway operating income for 1948 would be the equivalent in purchasing power to about \$552 million in 1929, compared with a net railway operating income of \$1,252 million actually earned in that year. The purchasing power of the railroads, Dr. Parmelee declared, is of the utmost importance in order that the carriers may "maintain their credit, procure additional equipment, and perform the rehabilitation and improvement work required for continued operation of a safe and efficient transportation system, adequate to meet the needs of the nation in times of peace and war." If the employees are held to the 15½ cent wage increase, the carriers, Dr. Parmelee concluded, "have an opportunity to bridge the gap between revenues and costs and restore some degree of stability to the railroad industry in 1948."

Dr. Leiserson, chairman of the emergency board, asked for an additional extension of time—to March 27—to complete the hearings. Counsel for the employees stated he would like time to consider and that he would give his answer at a later date. Chairman Leiserson expressed the opinion that his board would need at least 15 days to prepare its report after conclusion of the hearings. He stated that the quickest way to speed the outcome of the case would be, after both sides have presented their cases, for the parties to "Talk to each other and agree on about 99½ per cent of these rules."

Kendall Report Notes Effect of Weather

Car loadings were down and operations slowed in recent weeks

How the "severe weather conditions" of recent weeks adversely affected railroad traffic and operations was reported by Warren C. Kendall, chairman of the Car Service Division, Association of American Railroads, in his latest monthly review of the "National Transportation Situation." Mr. Kendall

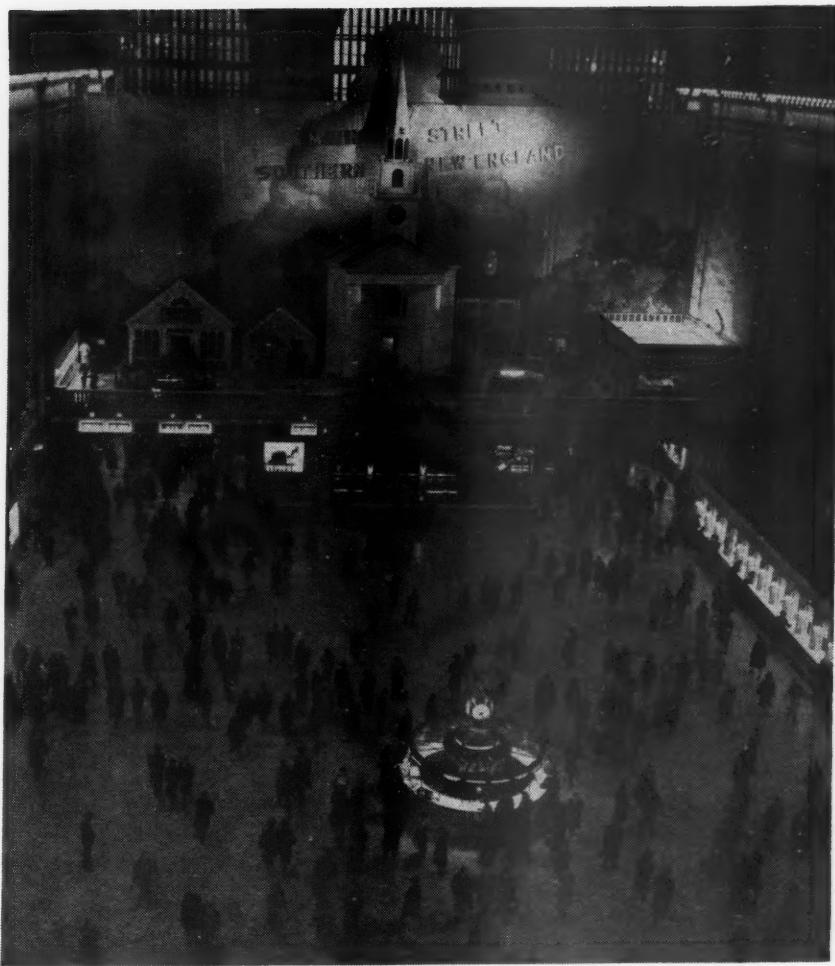
blamed the weather for the "disappointing" volume car loadings during 1948's first six weeks, when the total was 3 per cent less than that of the comparable 1947 period despite the Shippers Advisory Board's forecast that first-quarter loadings would be 3.5 per cent above last year.

With the advent of milder temperatures, Mr. Kendall said, normal car-distribution plans will again be possible. "It can here be recorded," he continued, "that the railroads have had nearly five weeks of unusually cold and stormy weather which has had a serious retarding effect on the release and movement of freight cars of all types, with a consequent substantial backlog of shipments accumulating which will tax the car supply in the weeks ahead. There does not, at this time, appear to be anything fundamentally wrong with the forecasts submitted by the Advisory Boards weeks ago which a few weeks of favorable weather will not correct."

With respect to box cars, Mr. Kendall reported that there has been a "steady increase in demands for the higher-grade car," with some actual shortages; but the supply of "rough box cars" continues "ample in most areas." The adverse weather slowed down the movement of empty box cars to the West, but the C.S.D. chairman anticipated that such movement will now become "substantially heavier." Meanwhile, the supply of automobile cars remains sufficient to meet requirements, while it has been possible to continue assigning some stock cars to movements ordinarily handled by box cars.

The unloading of coal cars and their movement was also adversely affected by the severe weather, with a loss of bituminous production which Mr. Kendall estimated at 45,000 carloads. The "frozen lading" problem was found to be less troublesome in connection with the unloading from hopper cars of commodities other than coal. With respect to gondola cars, Mr. Kendall reported that most of the steel mills in Eastern-Allegheny territory have been short of that type of equipment "as a direct result of the extended period of freezing weather." Thus they have "considerable tonnage" piled on the ground, and there are also "heavy demands" for gondolas to protect the seasonal movement of pulpwood in the Northwest.

The supply of flat cars has recently "tightened up materially" in the Central Freight Association and Mississippi Valley areas, while covered hoppers being used for bulk grain and other commodities must be returned to their owners by March 1 "in anticipation of brisk demands for cement and the heavy program contemplated for general building, and road construction." The refrigerator car situation, Mr. Kendall said, "continues tight in most sections of the country with shortages reported in Maine, Minnesota, North Dakota, Wis-



The New York, New Haven & Hartford's exhibit featuring southern New England as a place to "live, work and play" was opened to the public in Grand Central Terminal, New York, on February 17. More than 3,000,000 visitors are expected to see the exhibit which will continue, admission-free, throughout the year. The exhibit features a full-scale replica of a colonial village and displays products and machines of present-day New England. Different products will be displayed each month.

consin, Washington, Idaho and Florida." Here again, the "severe cold weather and snow in the northern regions have made it difficult to move empty cars to loading territories."

Reviewing the production of freight cars in January, the C.S.D. chairman noted that the month's output "failed to meet full expectations aroused by the record-high delivery in December." He put at 8,949 the January total of freight cars installed by all railroads and all car lines, the class I railroad total having been 8,240. Thus the 10,000 goal was missed by 1,051 in January as compared with a shortage of only 117 in December. However, Mr. Kendall pointed out that the January deliveries exceeded retirements for a net gain of 3,876 cars. "This," he added, "is the third consecutive month showing a gain in ownership, the total for the three months being 10,034 cars. This includes a gain of 4,644 box, 6,889 hoppers, 250 refrigerators and a loss of 1,099 gondolas."

With respect to the program recently inaugurated for more effective enforcement of Car Service Rules, Mr. Kendall solicited the cooperation of shippers. The Car Service Division, he said, has prepared a chart showing by map and alphabetical allocation the home districts for all principal car owners; and shippers are invited to secure from C.S.D. district offices copies for use by those responsible for the routing and billing of cars. The objective sought to be obtained by the program, Mr. Kendall explained, "is a substantial increase in the number of cars on owners' rails in order that necessary repairs and rebuilding may be accomplished to an adequate and satisfactory degree."

The average turn-around time for all freight cars in January was less favorable than in December—15.53 days as compared with 14.93 days. The freight-car detention figures indicated that 16.96 per cent of the cars placed in January were detained beyond the 48-hours free

time. This compared with 16.02 per cent for December and 17.98 per cent for January, 1947.

Eight Air Lines Compete for Illinois Short-Hop Rights

Applications for certificates of convenience and necessity to operate airplanes between Chicago and 29 destinations within the state of Illinois are pending before that state's commerce commission. Most of the applicants seek to engage in the transportation of whatever traffic is available and specifically seek rights to transport passengers, baggage, mail, newspapers, express and freight. With but few exceptions the applicants seek rights for duplicate services. Seven of the 8 lines seek rights between Chicago and Springfield; 6 to Decatur and Peoria (the latter is already served by 3 air lines) and 5 to East St. Louis, Danville, and Rockford. Only one applicant (Trans World Airline), which seeks rights between Chicago and Peoria with authority to serve Quincy, is a major established air line.

January Employment

Railroad employment decreased 1.02 per cent—from 1,331,478 to 1,317,912—during the one-month period from mid-December to mid-January, and the mid-January total was 1.08 per cent below that of January, 1947, according to the preliminary summary prepared by the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission. The index number, based on the 1935-39 average, was 134.3 for January, as compared with 132.5 for December, and 135.7 for January, 1947.

January employment was above that of December, 1947, in only two categories, the increases being 0.20 per cent in executives, officials and staff assistants and 0.10 per cent in transportation (yardmasters, switch-tenders and hostlers). The decreases ranged from 0.13 per cent in the maintenance of equipment and stores group to 3.42 per cent in transportation, other than train, engine and yard.

As compared with January, 1947, employment last month rose in three groups, the increases ranging from 0.10 per cent in transportation (train and engine service) to 1.75 per cent in the executive, officials and staff assistants category. The decreases ranged from 0.87 per cent in maintenance of equipment and stores to 6.04 per cent in transportation, other than train, engine and yard.

A.C.L. Yard Foreman Awarded Medal of Honor by Truman

The Interstate Commerce Commission has announced that President Truman, acting upon the recommendation of the Committee on Award of Medals of Honor, has bestowed such a medal

on E. W. Cogburn, a yard foreman employed by the Atlantic Coast Line. The medal was the 59th to be awarded under the Medals of Honor Act of 1905, which provides for bronze medals of honor in recognition of outstanding feats of bravery in connection with the saving of life upon railroads.

According to the commission, award of the medal to Mr. Cogburn was based upon his rescue at Florence, S. C., in 1946 of an elderly man, Bud Hyman, from an A. C. L. track upon which a switching movement was being made. The commission said that Mr. Cogburn, in accomplishing the rescue, exhibited "extreme daring and greatly endangered his own life."

The rescue occurred about 5:50 p. m. on January 8, 1946, at which time a Diesel switch engine was coupled to the north end of several freight cars which were standing on a yard track in such a manner as to block the Dargan street crossing in Florence. "Shortly thereafter," the commission's statement said, "the engine and cars began to move southward. Mr. Cogburn was standing on the west side of the track near the leading car when he observed Mr. Hyman start to cross the track from east to west ahead of the moving cars. Mr. Cogburn shouted a warning and ran upon the track just as the forward end of the leading car struck Mr. Hyman and threw him down, his body falling across the west rail. Mr. Cogburn succeeded in dragging Mr. Hyman clear of the rails, but barely escaped being struck by the leading car, which was moving at a speed of 2 to 4 m. p. h."

Veterans of 759th R.O.B. Organize

A permanent organization of veterans who served with the 759th Railway Operating Battalion during World War II has been formed at St. Louis, Mo., for the purpose of maintaining contact with each other. The organization has announced that its second annual reunion will be held at the York Hotel in St. Louis this year on October 1 to 3, inclusive. Detailed information regarding the veterans' group can be obtained by writing to Henry Weiler, secretary-treasurer, 759th Railway Operating Battalion Vets, 2200 Missouri Pacific Building, St. Louis 3.

Department of Transportation Bill Hearings Slated to Start March 9

The first of a series of four hearings before a subcommittee of the Senate committee on interstate and foreign commerce on legislation designed to establish a federal Department of Transportation under a secretary of transportation will be held March 9, 10 and 11, it has been announced by Senator Capehart, Republican of Indiana, and sponsor of the measure, S. 1812. Provisions of the bill were summarized in the *Railway Age* of December 6, 1947, page 74.

A spokesman for the subcommittee said that only representatives of government agencies, including Colonel J. Monroe Johnson, director of the Office of Defense Transportation, have been invited to testify at the initial hearing. Representatives of industry, labor and other interested parties will be heard at subsequent sessions. In addition to Senator Capehart, other members of the subcommittee include Senators Reed of Kansas, Brewster of Maine, Republicans; Johnson of Colorado, and McFarland of Arizona, Democrats.

Signaling Hearings

Petitions filed by the Missouri Pacific, St. Louis, Brownsville & Mexico, St. Louis-San Francisco, St. Louis, San Francisco & Texas, St. Louis Southwestern, St. Louis Southwestern of Texas and the Illinois Central for modification of the Interstate Commerce Commission's order of June 17, 1947, in the Docket No. 29543 proceeding, wherein it required the carriers to install certain signaling devices on lines over which high-speed trains are run, have been assigned for hearing April 20 at the Hotel Statler, St. Louis. Commissioner Patterson and Examiner E. J. Hoy will preside.

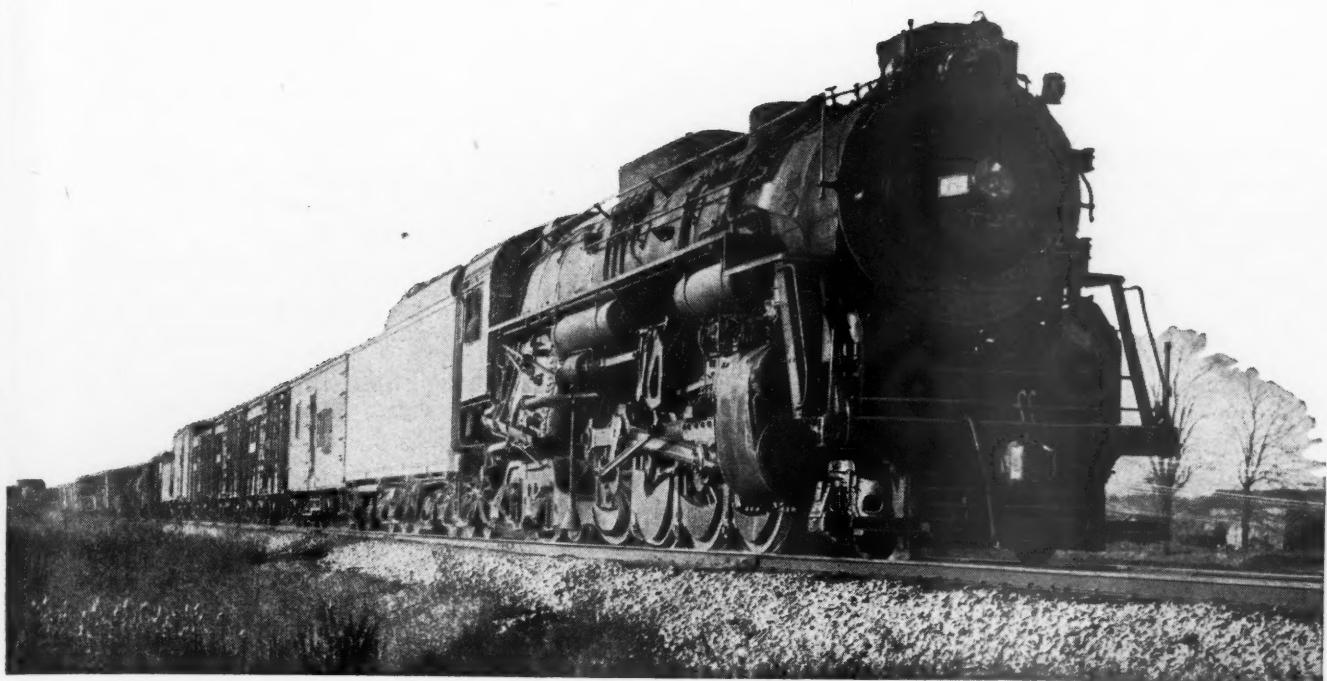
32 States to Waive Truck-Weight Limitations

J. E. Keller, Office of Defense Transportation advisor on state "barriers," announced this week that state governors have responded "promptly and wholeheartedly" to the recent appeal of Colonel J. Monroe Johnson, director of the O.D.T., for relaxation of state weight laws to facilitate the transportation of petroleum products in maximum quantities in tank trucks. Colonel Johnson's appeal was noted in *Railway Age* of February 7, page 63. According to an O.D.T. announcement, only five of the 37 states which thus far have responded to Colonel Johnson's request have refused to cooperate in the voluntary program.

I. C. 1947 Accident Ratio Lowest in Road's History

The more than 40,000 employees of the Illinois Central experienced only 195 reportable casualties during 1947, for a casualty ratio of 1.96 per million man-hr. worked—the lowest in the I. C.'s nearly 100 years of operation, C. R. Young, director of personnel, announced recently. The I. C. employee accident ratio in 1946 was 2.17.

For the fourth consecutive year the railroad was entirely free of passenger fatalities arising from train accidents, according to Mr. Young. The safest operating unit of the I. C. during 1947 was the Memphis (Tenn.) terminal, with a casualty ratio of 0.71. The road's second safest unit was the East St. Louis (Mo.) terminal, which experienced only 2 reportable injuries for a



Steam trains are making 2,000,000 miles a day



While the spotlight of public attention naturally falls on newest developments, it is sometimes well to back off and take a look at the overall picture.

We're thinking of the steam locomotive. These locomotives are making better than two million train-miles today — and will do it again tomorrow and the next day. They — these steam locomotives — are producing more revenue ton-miles right now than ever before in peace-time history.

Many of these locomotives are old, too old, and have distorted the statistics on performance. Many, however, are modern. And on modern steam power — locomotives that pack 5000 to 9000 horsepower and can stay on the road for 16 and 18 hours, and then turn around in an hour or two — the statistics look pretty good.

We build such modern power — and are convinced that it has its place.



DIVISIONS: Lima, Ohio — Lima Locomotive Works Division; Lima Shovel and Crane Division, Hamilton, Ohio — Hooven, Owens, Rentschler Co.; Niles Tool Works Co.

PRINCIPAL PRODUCTS: Locomotives; Cranes and shovels; Niles heavy machine tools; Hamilton diesel and steam engines; Hamilton heavy metal stamping presses; Hamilton-Kruse automatic can-making machinery; Special heavy machinery; Heavy iron castings; Weldments.

ratio of 1.05. In spite of increased motor vehicle travel, Mr. Young said, accidents at highway-rail intersections on the I. C. decreased from 3.17 per million locomotive-mi. in 1946 to 3 in 1947.

New Budd Publicity Program Specially Planned for Women

The Budd Company has announced the broadening of its public relations activities to include a program designed to describe for women the role the firm has played in the development of all-stainless steel railroad passenger cars in the United States. The program, being carried on from a new public relations office at 630 Fifth avenue, New York, is intended to keep the feminine population apprised of the Budd-built trains now operating on various railroads, those which are in production and soon to be put into service and to advise how travel on these trains can be fitted into family vacation plans.

L. V. Placing Radio-Telephone On New York Harbor Tug Fleet

Movements of Lehigh Valley tugboats in New York harbor will soon be controlled by ship-to-shore radio-telephone now being installed under regulations of the Federal Communications Commission, it has been announced. Broadcasting and receiving stations are being placed on the road's tugboats and in the Jersey City, N.J., terminal. When the installation is completed, a call from the tug dispatcher will be received via loudspeaker on the boat and the vessel's captain will be able to pick up a telephone to talk with the dispatcher. All other tugs in the fleet will be able to hear the conversation, thus enabling the dispatcher, if several tugs are needed for a particular job, to give simultaneous orders to all of them.

Federation for Railway Progress Makes Annual Awards

The Federation for Railway Progress, at its "first annual dinner" at the Waldorf-Astoria hotel, New York, on February 24, made an award to the Chicago, Burlington & Quincy as the railroad which offered the best passenger service in 1947. The certificate was presented by William C. MacMillen, president of the federation, and was accepted for the Burlington by Donald Ashton, executive assistant of that road. Mr. MacMillen said that the Monon and the Milwaukee had been "runners up" for this honor. An award also was made for the best newspaper work of the year bearing on railroads, the recipient being Lee Payne, editor of the Los Angeles Daily News, for that paper's agitation last year against alleged discrimination against the West in freight-car distribution for which the Association of American Railroads was blamed. A special

newspaper award was bestowed on C. B. Palmer of the New York Times staff for some verse he wrote for his paper in January, 1948, lampooning the Long Island, which Mr. MacMillen characterized as "our musical comedy railroad."

In addition to the awards there were addresses by Attorney General Tom Clark and by Robert R. Young, chairman of the federation and of the Chesapeake & Ohio. The weekly radio program, "Meet the Press," was staged on the dais during the dinner, the subject of the journalists' grilling being A. F. Whitney, president of the Brotherhood of Railroad Trainmen. Attorney General Clark in his speech emphasized the importance of railroads to the national defense—and then ridiculed railroad objections to subsidies for other agencies of transportation by bringing up the well-worn land-grant argument. He then delivered the orthodox Justice Department anti-railroad tirade, following the pattern set by Henry Wallace in his 1943 Dallas speech, reported in *Railway Age* of October 23, 1943.

In his address Chairman Young announced four objectives of the federation in behalf of the railroad industry: (1) nutrition, in the form of adequate rates; (2) competition, by opposition to the Bulwinkle Bill; (3) replacement of old equipment; and (4) a "progressive" attitude in dealing with labor.

Bills in Congress

Congress has received another bill to amend section 25 of the Interstate Commerce Act to give the Interstate Commerce Commission authority to require railroads "to install and maintain communication systems and to establish and observe operating rules, regulations, and practices." It is S. 2162, introduced in the Senate by Senator Johnson, Democrat of Colorado.

Representative Devitt, Republican of Minnesota, has introduced ("by request") H. R. 5397 to amend the Railroad Retirement Act "by granting credit for services performed prior to January 1, 1937, to persons who have six months of service between August 29, 1935, and January 1, 1947."

New Haven Asks Permission To Cut Old Colony Service

The New York, New Haven & Hartford has petitioned the Massachusetts department of public utilities for authority to discontinue 221 passenger train trips on its Old Colony division, affecting the South Shore and Cape Cod, under terms of a plan approved by the United States District Court of Connecticut and sustained by the Court of Appeals. According to the plan, the passenger service may be reduced or dropped if losses chargeable to passenger operations on the division exceed \$850,000 for any period of 12 consecutive months after October 1, 1947. In its petition the New Haven said the net

operating deficit on the division for October, 1947, amounted to \$338,555. It was reported that if the road's petition is granted, the Eastern Massachusetts Street Railway Company will seek authority to supplant the curtailed train service with busses.

Washington Traffic Club Holds Annual Dinner

More than 600 members and guests of the Traffic Club of Washington, D. C., attended the club's forty-first annual dinner which was held at the Mayflower Hotel in that city on February 18. The guest speaker was Warren T. White, director of public relations of the Seaboard Air Lines, who delivered an address entitled "What Is the Future of Railroad Transportation?" Lieutenant Colonel I. C. Olsen, president of the club, acted as toastmaster.

Shows State-to-State Flow Of 1947 First-Quarter Traffic

The Bureau of Transport Economics and Statistics of the Interstate Commerce Commission has issued six tables showing, on a one-per-cent-sample basis, the state to state movements of tons of freight as represented by the carload terminations reported by Class I railroads for the first quarter of 1947. The compilation is Statement No. 484 of the bureau.

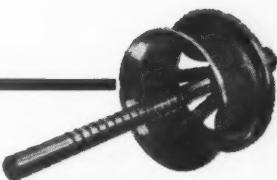
It employs the same basic tonnage data as those which were included in an earlier statement indicating intraterritorial and interterritorial movements in last year's first quarter (see *Railway Age* of January 10, page 43). The data are being taken from waybills submitted in response to the commission's September 6, 1946, order requiring Class I roads to file all audited waybills representing their carload terminations which are numbered "1" or with numbers ending in "01."

Equipment On Order

Railroads and private car lines had 119,711 new freight cars on order on February 1, as compared with 119,786 on order on January 1, according to the Association of American Railroads. Of the former total, Class I roads and railroad-owned private-controlled refrigerator companies had 107,364 new freight cars on order, as compared with 105,112 on January 1.

Cars on order by Class I roads and railroad-owned private-controlled refrigerator companies on February 1 included 36,615 box cars, of which 35,494 were plain and ventilated and 1,121 automobile box cars; 46,261 hopper cars, including 4,033 covered hoppers; 16,196 gondolas; 1,025 flat; 5,702 refrigerator; 800 stock and 765 miscellaneous freight cars. Of the total number of new freight cars which Class I roads had on order on February 1, 27,654 will be built in railroad shops and 79,710 in outside shops.

Rising Fuel Costs Can be Offset...



with the FRANKLIN SYSTEM OF DISTRIBUTION

With recently increased cost of locomotive fuels playing such an important part in the great rise in train operation costs, it is especially important at this time to study the fuel-saving possibilities of the Franklin System of Steam Distribution.

Application of this system to your existing or new locomotives will offset rising fuel costs.

The Franklin System of Steam Distribution, using poppet valves in place of piston valves, increases the efficiency of transforming steam into horsepower-hours. At normal operating speeds, for either freight or passenger locomotives, the increase in horsepower output will be 19% to 30% for the same steam consumption. For the same power output, fuel savings will be even more pronounced, have reached 45% with maximum evaporation. In normal road service, at less than maximum performance, fuel savings will average from 15% to 25% depending on operating conditions.

We would like to show you how this can be done on your locomotives — either existing or new — for either freight or passenger service.



FRANKLIN RAILWAY SUPPLY COMPANY

NEW YORK • CHICAGO • MONTREAL

STEAM DISTRIBUTION SYSTEM • BOOSTER • RADIAL BUFFER • COMPENSATOR AND SNUBBER • POWER REVERSE GEARS
AUTOMATIC FIRE DOORS • DRIVING BOX LUBRICATORS • STEAM GRATE SHAKERS • FLEXIBLE JOINTS • CAR CONNECTION

The Class I roads also had 1,513 locomotives on order on February 1, the most since September 1, 1923, when the number was 1,517. On February 1, 1947, there were 639 on order. The 1948 total included 96 steam, three electric and 1,414 Diesel-electric locomotives, as compared with 53 steam, six electric and 580 Diesel-electrics on February 1, 1947.

Class I roads and railroad-owned private-controlled refrigerator car companies put 8,240 new freight cars in service in January, compared with 2,795 in the same 1947 month. Those installed in January included 3,791 box cars, of which 3,305 were plain and ventilated and 486 automobile box cars; 2,964 hopper cars, including 47 covered hoppers; 482 gondolas; 794 refrigerator; 41 flat; 50 stock and 118 miscellaneous freight cars.

The Class I roads also put 77 new locomotives in service in January, of which one was steam, one electric and 75 Diesel-electric. New locomotives installed in the same 1947 period totaled 74, of which seven were steam and 67 Diesel-electric.

The Class I roads and railroad-owned private-controlled refrigerator companies retired 4,364 freight cars in January, as compared with 3,247 in the same month last year.

Correction— "Challengers" Discontinued

The caption below a photograph of the Union Pacific's former "San Francisco Challenger" appearing in *Railway Age* of February 14, page 50, inadvertently give the impression that the train is still in operation. Actually, as was reported at the time, this pioneer, low-cost long-distance train was discontinued October 1, 1947.

I.C.C. Seeks Car-Ownership Information from 20 Roads

Twenty railroads have been ordered by the Interstate Commerce Commission to furnish specified information with respect to their individual ownerships of several types of freight cars. The order in No. 29669, Car Service—Freight Cars, was dated February 10 and issued by the commission's Division 3. The required reports must be submitted to the commission's Bureau of Transport Economics and Statistics on or before April 15.

Railroads named are: Atchison, Topeka & Santa Fe; Atlantic Coast Line; Baltimore & Ohio; Boston & Maine; Chicago & Eastern Illinois; Chicago Great Western; Chicago, Milwaukee, St. Paul & Pacific; Chicago, Rock Island & Pacific; Delaware & Hudson; Erie; Gulf, Mobile & Ohio; Illinois Central; Kansas, Oklahoma & Gulf; Lehigh Valley; Missouri-Kansas-Texas; New York, New Haven & Hartford; New York, Susquehanna & Western;

Norfolk Southern; St. Louis Southwestern; and Southern Pacific.

The statements required of these roads are to contain "complete and adequate information," on the subjects specified below respecting (a) plain and ventilated box cars, (b) automobile box cars, (c) refrigerator cars, (d) stock cars, (e) ordinary gondola cars, (f) flat cars, (g) hopper cars, and (h) covered hopper cars:

1. The number of each class of freight car enumerated above owned* on January 1, 1948, and January 1, 1948.

2. The number of each class of freight car enumerated above installed during the calendar year 1947.

3. The number of each class of freight car enumerated above retired during the calendar year 1947.

4. The number of each class of freight car enumerated above on order January 1, 1948, and covered by signed contracts.

5. In your opinion, is your ownership* as of January 1, 1948, of each class of freight car enumerated above adequate to meet all reasonable requests for such equipment by the shipping public you serve throughout the year? Give the reasons for your answer. If your answer is "No", state the number of cars which in your opinion would be adequate. Also, explain clearly the causes of the present inadequacy of your equipment and what steps you propose to take to remedy this situation.

6. Assuming that requirements for transportation in 1949 remain at or about the 1947 level, in your opinion, will your ownership* as of January 1, 1948, of each class of freight car enumerated above, increased or diminished by installations and retirements made during the calendar year 1948, be adequate to meet all reasonable requests for such equipment by the shipping public you serve during 1949? Give the reasons in detail for your answer. If your answer is "No", state the number of cars which in your opinion would be adequate. Also, explain clearly what steps you propose to take to remedy this situation.

* For the purpose of this questionnaire, equipment operated under a bona fide lease is to be accounted for with owned equipment.

I.C.C. Reopens Case Covering Rules for Payment of Charges

The Interstate Commerce Commission has reopened the Ex Parte No. 73 proceedings wherein its previous reports have prescribed regulations for the payment of railroad rates and charges. The reopening is for further hearing "as to the credit regulations on rail less-than-carload traffic."

The commission's order, dated February 2 and made public February 19, came after its consideration of the petition (and replies thereto) wherein the Missouri-Kansas-Texas and Texas & Pacific seek a modification of the regulations to enlarge the credit period on l.c.l. from the present 48-96 hrs. to seven days. Replies to the petition included that of Official territory roads which opposed the modification (see *Railway Age* of November 1, 1947, page 57).

Freight Car Loadings

Car loading figures for the week ended February 21 were not available when this issue went to press.

Loading of revenue freight for the week ended February 14 totaled 734,262 cars, and the summary for that week as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loading

For the Week Ended Saturday, February 14

District	1948	1947	1946
Eastern	135,879	146,206	134,158
Allegheny	151,994	165,836	126,452
Pocahontas	64,048	68,706	59,787
Southern	123,522	137,208	131,635
N. Western	80,716	86,696	77,428
Cen. West.	119,348	129,835	118,357
S. Western	58,755	65,490	59,237
Total W. Dist.	258,819	282,021	255,022
Total All Roads	734,262	799,977	707,054

Commodities:	Grain and grain products	51,624	51,843
Livestock	7,656	13,320	18,099
Coal	171,537	178,935	181,840
Coke	14,837	14,509	7,799
Forest pdts.	35,365	49,797	36,318
Ore	12,403	12,233	5,412
Mdse. l.c.l.	106,248	118,833	118,332
Misc.	349,410	360,726	287,411
Feb. 14	734,262	799,977	707,054
Feb. 7	747,394	767,301	713,240
Jan. 31	727,038	835,051	723,301
Jan. 24	771,992	821,928	708,554
Jan. 17	811,286	828,060	749,443

Cumulative total,
7 weeks .. 5,305,457 5,570,698 5,027,458

In Canada.—Carloadings for the week ended February 14 totaled 69,529 cars as compared with 70,777 cars for the previous week and 65,909 cars for the corresponding week last year, according to the compilation of the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
February 14, 1948..	69,529	35,970
February 15, 1947..	65,909	35,352
Cumulative totals for Canada:		
February 14, 1948..	489,355	235,415
February 15, 1947..	465,182	248,837

EQUIPMENT AND SUPPLIES

FREIGHT CARS

The Chicago, Rock Island & Pacific has ordered 1,000 P-S-1 "package-type" box cars from the Pullman-Standard Car Manufacturing Company. The cars will be built at Pullman-Standard's shops in Michigan City, Ind. The inquiry for these and other freight cars was reported in the *Railway Age* of January 10.

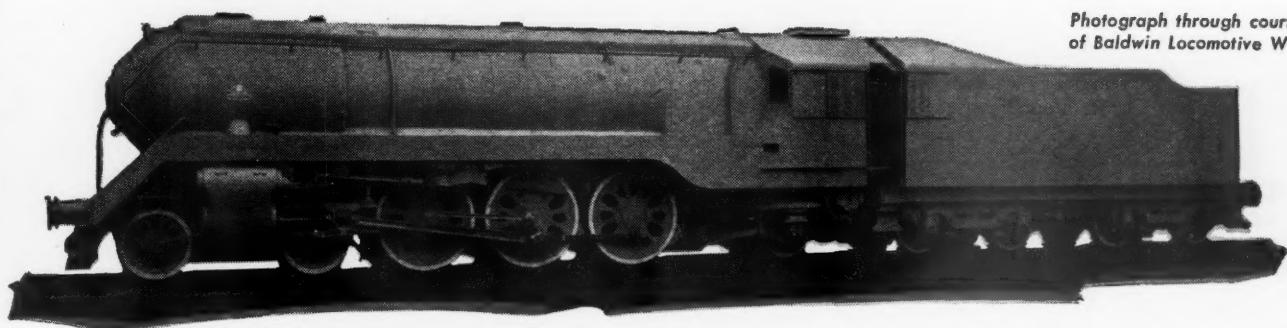
SIGNALING

The Missouri Pacific has ordered equipment from the General Railway Signal Company for the extension of centralized traffic control territory between Campbell, Ark., and Diaz, about 1.5 mil. of double track. A new section, to be added to the existing control machine at Newport, Ark., will have 9 track indication lights and 6 levers to control 4 switch machines and 12 signals.

The Union Pacific has placed orders with the Union Switch & Signal Co. for materials of its manufacture for the in-

Security circulators

Photograph through courtesy
of Baldwin Locomotive Works



in Indian Railway Locomotives

The 4-6-2 locomotive illustrated has three Security Circulators in the firebox, an indication of the interest the Indian Government Railways is taking in the advantages of Circulators for coal-burning steam passenger locomotives.

This is another example of the steadily widening recognition of the effectiveness of Security Circulators for increasing the steaming efficiency of a locomotive.

AMERICAN ARCH COMPANY, INC.

NEW YORK • CHICAGO

SECURITY CIRCULATOR DIVISION

stallation of an electro-pneumatic car retarder system in the 40-track classification yard at North Platte, Neb. The orders include 9-car retarders totaling 1,208.5 rail feet of retarder, 39 direct-acting electro-pneumatic switches, 3 control machines, cases with the necessary relays, rectifiers, transformers and housings, for detector track circuits for the 39 switches and 5 color-light type signals for the control of humping operations. The field installation will be done by railroad signal construction forces.

SUPPLY TRADE

Arthur E. Heffelfinger, sales engineer of the Symington-Gould Corporation since 1924, and who had been connected with the firm and its predecessors since 1919, retired on January 1. Mr. Heffelfinger was born in Reading, Pa., on April 10, 1881, and began his business career in 1900 as a special apprentice in the car department of the Philadelphia & Reading (now the Reading). From 1903 to 1905 he was a car draftsman for, successively, the former Harlan & Hollingsworth Corp. and the Pressed Steel Car Company. During the next eight years he worked for the American Car & Foundry Co. in



Arthur E. Heffelfinger

various capacities, finally as a sales engineer in Cuba, in which capacity he was employed by the Richardson Scale Company from 1913 to 1914. In the latter year he joined the Universal Car & Manufacturing Co. as a mechanical engineer, and one year later he went to Hamilton, Ont., as chief engineer for the National Steel Car Company, the position he held when he joined the T. H. Symington Company in 1919 as a mechanical engineer.

The Pyle-National Company has announced the appointment of **Thomas J. Little** as Eastern sales manager, with offices in Grand Central Terminal, New York. Mr. Little spent the first five years of his business career with the Anaconda Copper Mining Company and the next four years in the study of electrical engineering at Union College

and the General Electric engineering test departments at Schenectady, N. Y., and Pittsfield, Mass., where he specialized in railway electrification and high voltage work. After completion of this training he returned to Anaconda and worked for five years as electrical engi-



Thomas J. Little

neer and electrical superintendent of the firm's Anaconda, Mont., and Butte properties. Since 1925, Mr. Little has been a member of the sales organization of the Anaconda Wire & Cable Co., New York, as sales engineer, manager of transmission sales and as executive assistant.

H. E. Cable, formerly general manager of Aluminate Chemicals Ltd., Toronto, Ont., has been appointed district manager of the Pittsburgh, Pa., office of the Lincoln Electric Company, to succeed **J. S. Roscoe**, who has been transferred to the Chicago office as district manager.

James R. Sebastian, general manager of the Rapids-Standard Company, also has been elected president, in which capacity he succeeds **Lloyd C. Backart**, who has been elected chairman of the board of directors. Mr. Backart, also sales manager, will continue in that capacity to direct merchandising operations and long range planning. Other officers elected at the meeting of the board of directors were: Secretary-treasurer, **Roger S. Calvert**; vice-presidents, **Paul F. Millett**, **Howard R. Pearl** and **Robert L. Gunnell**; and assistant secretary and treasurer, **Eugene L. Hummell**.

A. F. Rolf, assistant secretary of the Allis-Chalmers Manufacturing Company for more than 25 years, has retired.

John E. Heuser has been appointed assistant sales manager of the LeRoi Company. Mr. Heuser will take over many of the duties of **Cecil W. Brown**, who recently resigned as general sales manager.

T. H. Bateman, who was formerly associated with W. H. S. Bateman & Co. for over 15 years, has joined the sales department of Pipe & Tubular Products, Inc. and will assume charge of

railroad sales, in addition to being a special representative in the industrial field.

Cecil F. Dawson, formerly first vice-president of the Dixie Cup Company, has been elected president. Mr. Dawson also is chairman of the executive committee of the board and has been a director for many years. **C. L. Van Schaick**, formerly vice-president in charge of sales, has been elected executive vice-president and a director, to succeed the late **Julian E. McGiffert**.

Col. Frederick C. Horner, director of the field operations section, distribution staff, General Motors Corporation, Detroit, retired from active duty at the end of February. He was born on May 6, 1887, at Marshall, Va., and his first job was with the Crocker-Wheeler Company, as a clerk, in 1901. He entered the trucking business in 1915 and in 1916 was the organizer and president of the Baltimore Motor Haulage Company which operated in Baltimore and vicinity and subsequently obtained the contract for truck transportation in the building of Camp Meade, Md. Early in 1917, as a civilian, he was placed in charge of motor transport operations at Langley Field, Va. He then entered the Army as a lieutenant and served overseas with the A.E.F. until July, 1919, when he joined the Packard Motor Car Company of New York as transportation engineer. In 1921 he went abroad and spent two years studying motor transport operations in England and continental Europe. In 1923 he became affiliated with General Motors as assistant to Alfred P. Sloan, Jr., then operating vice-president. Later, he organized and became manager of the railroad service department, and in 1937 was assigned as assistant to Mr. Sloan, chairman of the board. Shortly after Pearl Harbor, he rejoined the Army to organize and operate the highway division, Transportation Corps, Army Service Forces, and was placed on inactive duty in the autumn of 1945. Returning to General Motors, he has since been director of the field operations section, distribution staff.

Eugene S. Wright, formerly sales manager of Diesel products for the Baldwin Locomotive Works at Eddystone, Pa., has been promoted to district sales manager, with headquarters at St. Louis, Mo.

Gordon H. Proffitt, 547 Howard street, San Francisco 5, Cal., has been appointed to represent the Q & C Co. in the San Francisco territory, in place of **R. W. Jamison**, who has retired.

Edward A. Malling, a member of the electronics department of the General Electric Company, has been appointed sales manager of multi-weave products for the specialty division at Electronics Park, Syracuse, N. Y.

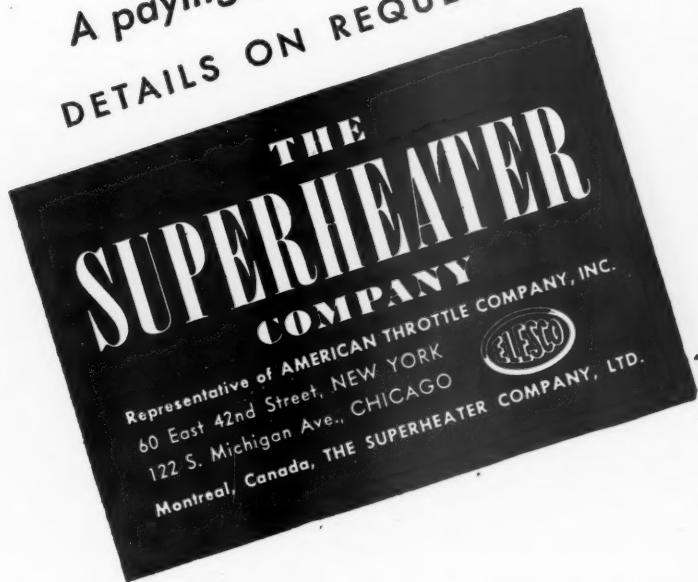
Robert H. McGrath, formerly vice-president and general manager of Jos. Dyson & Sons, has been appointed as

STOP



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STEAM DRYER SYSTEM
A paying proposition
DETAILS ON REQUEST



A 1906 (C 662)

Superheaters • Superheater Pyrometers • Exhaust Steam Injectors • Steam Dryers • Feedwater Heaters • Steam Generators • Oil Separators • American Throttles

February 28, 1948

sistant to the general manager of the National Machine Tool Builders' Association.

W. H. Holbert, formerly manager of the Stuttgart (Ark.) works of **Fairbanks, Morse & Co.**, has been appointed manager of the Three Rivers, Mich., plant, to succeed **Karl E. Barrett**, who has resigned because of ill health. The appointment of **J. R. Walsh**, formerly assistant manager of the company's Westco works in St. Louis, Mo., has been transferred to the Stuttgart works, to succeed Mr. Holbert as manager.

Carl E. Tack has been appointed assistant chief mechanical engineer of the Product Engineering department of the **American Steel Foundries** at Chicago. Mr. Tack has been associated with the company since 1937, principally as mechanical engineer in charge of product development.

OBITUARY

William Harty, late executive vice-president of the Canadian Car & Foundry Co. and chairman of the Canadian Locomotive Company, whose recent death was reported in last week's *Railway Age*, was born in Kingston, Ont., Canada, on September 18, 1878. He was educated at the Kingston Collegiate Institute and the Royal Military College in Kingston. After his graduation from the latter in 1900 he worked for two years in the shops of the Pittsburgh Locomotive Company. From 1902 until 1904 he did post-graduate work on locomotives at Purdue University. Mr. Harty joined Canadian Locomotive in 1904, serving, successively, as shop worker, machine shop foreman, assistant to the superintendent and assistant to the vice-presi-



William Harty

dent and general manager. From 1914 until 1919 he served with the Canadian Army. In 1919 he was appointed sales manager for Canadian Locomotive and in 1922 he became vice-president and secretary. Mr. Harty was elected president of the firm in 1924 and chairman of the board in 1932. In the latter year he also was elected vice-president of Canadian Car & Foundry.

ORGANIZATIONS

The next meeting of the **Canadian Railway Club** will be held on March 8 at the Mount Royal hotel at 8 p.m. A paper entitled "Development of the Steam Turbine Locomotive" will be presented by J. I. Yellott, director of research of the Bituminous Coal Research, Inc.

A dinner meeting of the **New England Railroad Club** has been scheduled for March 9, 6:30 p.m., at the Hotel Vendome, Boston. Following the dinner the annual election of officers will be held.

ABANDONMENTS

St. Louis, Brownsville & Mexico.—Division 4 of the Interstate Commerce Commission has issued a certificate stipulating that public convenience and necessity permit abandonment by this road of operation over approximately 16 miles of the Texas Mexican's mainline between Robstown, Tex., and Corpus Christi, including terminal facilities at those two points. The application for the certificate was filed by the T. M. after it had sought unsuccessfully to oust the Brownsville by serving notice of termination of the operating agreement and bringing suit out of which came a Supreme Court ruling that the commission had original jurisdiction. The abandonment would be effected by termination of the operating contract, and in that connection the commission found that such termination would be consistent with the requirements for the reorganization of the Brownsville under section 77 of the Bankruptcy Act.

The trackage agreement provides that either party may cancel it on one year's notice without giving any reason. In October, 1940, the T. M. notified the Brownsville trustee that it was exercising this right, effective 12 months after November 1, 1940. The Brownsville has nevertheless continued to use the facilities covered by the agreement, proffering payments on the basis of the contract rates, which have been refused by the T. M. Meanwhile, the latter filed its suit in the Texas courts, asking that the Brownsville be enjoined from further use of the facilities and seeking damages for such after the date of the contract cancellation notice. The case eventually reached the Supreme Court of the United States, which, as reported in *Railway Age* of May 4, 1946, page 928, held that the controversy should be submitted to the commission for determination of the administrative questions involved under the Interstate Commerce Act and section 77 of the Bankruptcy Act.

The commission's findings, follow generally those recommended in Examiner R. H. Jewell's proposed report which was noted in *Railway Age* of November 8, 1947, page 70. With respect to the

Brownsville's contention that the examiner failed to consider and recommend a finding as to the terms and conditions of the Brownsville's use of the T. M. facilities from the effective date of the cancellation of the trackage contract, November 1, 1941, to the date of the actual abandonment of operations of the Brownsville, the commission concluded that it does not have power to make such a finding. A conclusion to that effect had been urged by the T. M.

CONSTRUCTION

Elgin, Joliet & Eastern.—This road plans to renew 15 mi. of its main line track with new 132-lb. rail during 1948, the work on which is scheduled to begin in May. All of the rail will be welded into continuous lengths by the Oxweld pressure welding method, it was stated. The completion of this project will bring the road's total miles of welded track to 41, or 12 per cent of its entire mileage.

FINANCIAL

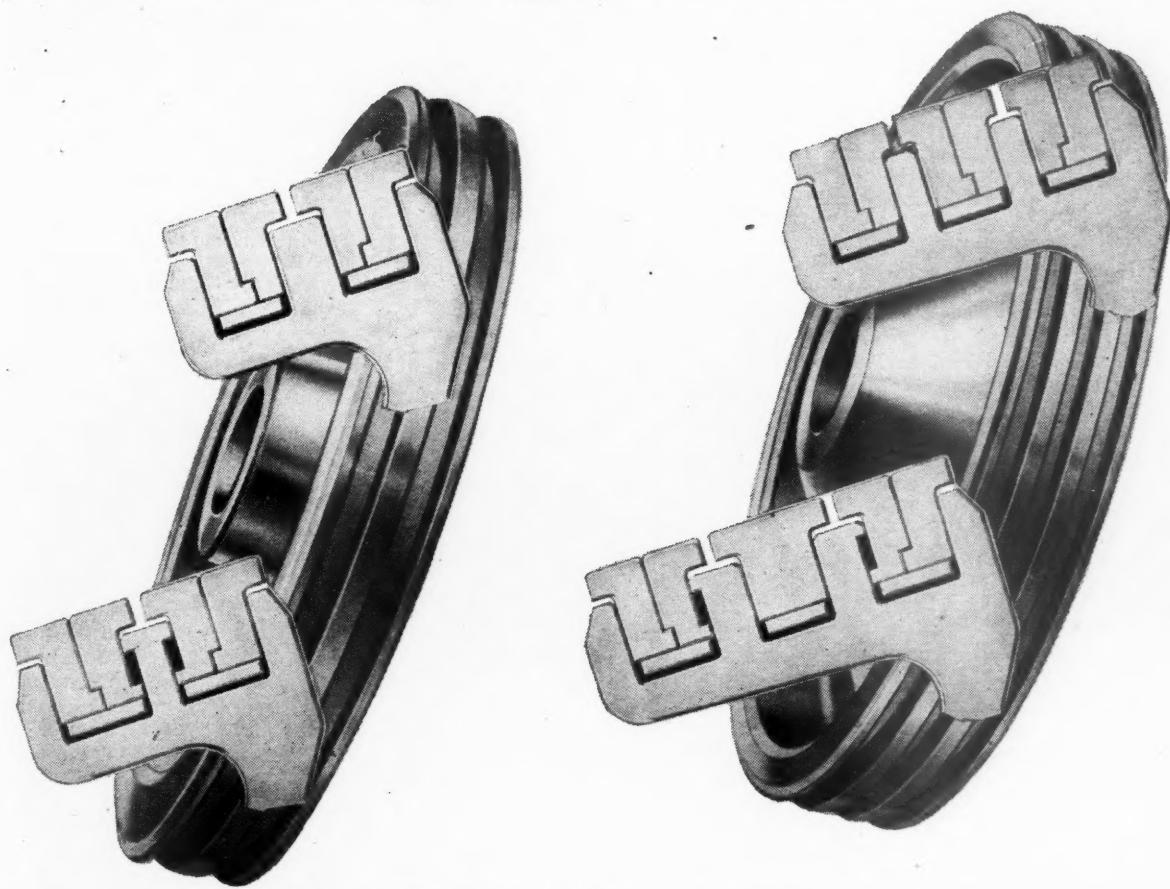
Baltimore & Ohio.—*To Pay Contingent Interest.*—Directors of this company have appropriated \$7,697,426 out of available income for 1947 to pay, on April 10, 1948, all contingent interest accrued on the company's bonds during the year ended on December 31, 1947.

Central of New Jersey.—*Reorganization.*—Division 4 of the Interstate Commerce Commission has modified its order of March 28, 1944, in the Finance Docket No. 12620 proceeding, so as to increase from \$15,000 to \$20,000 a year, effective January 1, the maximum limit of compensation to be paid to W. P. Gardner as trustee of this road.

Hillsboro & Northeastern.—*Notes.*—Division 4 of the Interstate Commerce Commission has authorized this road to issue not exceeding \$15,000 in promissory notes as evidence of a loan of a like amount from the Marine National Exchange Bank, Milwaukee, Wis. Proceeds of the loan will be applied toward the purchase and rehabilitation costs of a 45-ton Diesel-electric locomotive, built in 1942, which the applicant has acquired from the War Assets Administration for \$9,750. The notes will be dated December 1, 1947, will bear interest at the rate of 4 per cent annually, and will mature in 10 annual installments of \$1,500, starting December 1. They will be secured by a chattel mortgage on the locomotive.

Missouri-Kansas-Texas.—*Equipment Trust Certificates.*—This road has sold \$1,620,000 of equipment trust certificates to Freeman & Co. and associates on a

HUNT-SPILLER *Light Weight* ALLOY STEEL PISTONS and DUPLEX Lip Type SECTIONAL PACKING



A perfect combination for better performance

On many important American railroads you find this pair-up a standby because they have demonstrated the superior quality characteristic of all Hunt-Spiller products. The pistons, of electric furnace cast steel, may, be had with life-increasing flame hardened ring grooves to forestall wear at vital points. The Hunt-Spiller Duplex Lip Type Sectional Packing is available in the following combinations: All Hunt-Spiller Gun Iron; Combination of HSGI and centrifugally cast bronze; all centrifugally cast bronze. They are as dependable as the universally known and widely used Hunt-Spiller Air Furnace Gun Iron. Hunt-Spiller Manufacturing Corporation, 383 Dorchester Avenue, Boston 27, Mass. In Canada: Joseph Robb & Co., Ltd., 4050 Namur Street, Montreal 16, P.Q. Export Agents: International Ry. Supply Co., 30 Church St., New York 7, N. Y.

Hunt-Spiller are exclusive railroad sales representatives for Double Seal Piston Rings made for Diesel and other services. Double Seal rings are cast from Hunt-Spiller Air Furnace Gun Iron.

HUNT-SPILLER

**LIGHT WEIGHT
STEEL PISTONS AND VALVES
DUPLEX SECTIONAL PACKING
AIR FURNACE GUN IRON**

bid of 98.937 for 2½ per cent obligations. The average interest cost to maturity for the road is 2.637. The certificates were reoffered to the public at prices yielding from 1.30 per cent to 2.85 per cent, according to maturity. (See the *Railway Age* of February 7.)

Southern. — *Equipment Trust Certificates.* — This road has sold \$10,680,000 of series NN equipment trust certificates to Harriman Ripley & Co. and Lehman Brothers and associates on a bid of 99.20699 for 2½ per cent obligations. The certificates were reoffered to the public at prices yielding 1.30 per cent to 2.50 per cent, according to maturity. (See the *Railway Age* of February 7.)

St. Louis-Southwestern. — *Reorganization.* — Division 4 of the Interstate Commerce Commission has fixed maximum limits of final allowances for services and expenses during the period from January 15, 1947, to the "conclusion of the proceedings" in connection with the reorganization proceedings of this road under section 77 of the Bankruptcy Act. The commission allowed \$43,353 on claims amounting to \$134,309. Among the larger allowances fixed were the following: Walter E. Meyer, as chairman of a stockholders' committee, \$5,290, on a claim of \$6,786; Guaranty Trust Company of New York, as corporate trustee under the first terminal and unifying mortgage, dated January 1, 1912, \$4,565, on a claim of a like amount; James Piper et al, as counsel for the E. Stanley Glines committee (a committee for holders of first terminal and unifying mortgage bonds), \$3,858, on a claim of a like amount; and Mudge, Stern, Williams & Tucker, as counsel for the Chase National Bank of New York (holder of a secured note of the debtor), \$3,000, on a claim of \$4,100.

Wabash. — *New Director.* — William C. Shank, president of the Crowe Coal Company, Kansas City, Mo., has been elected a member of this road's board of directors and also a member of the finance committee.

Dividends Declared

Erie & Pittsburgh. — 7% guaranteed, 80¢, payable March 10 to holders of record February 28.

Minneapolis, St. Paul & Sault Ste. Marie. — common series A (v.t.c.) \$1.00, payable April 1 to holders of record March 15.

Philadelphia, Germantown & Norristown. — \$1.50, quarterly, payable March 4 to holders of record February 20.

Southern Pacific. — \$1.00, quarterly, payable March 22 to holders of record March 1.

United New Jersey & Canal. — \$2.50, quarterly, payable April 10 to holders of record March 20.

Wabash. — common, \$1.00; 4½% preferred, \$4.50, annually, both payable April 22 to holders of record March 31.

Average Prices Stocks and Bonds

	Feb. 24	Last week	Last year
Average price of 20 representative railway stocks	46.67	46.67	51.11
Average price of 20 representative railway bonds	85.76	86.18	91.95

RAILWAY OFFICERS

FINANCIAL and ACCOUNTING

John R. Tedford, whose promotion to auditor of freight receipts of the Texas & Pacific at Dallas, Tex., was reported in *Railway Age* of January 31, was born on August 10, 1903, at Dallas. He began his railroad career with the



John R. Tedford

T. & P. in 1918, subsequently holding various clerical positions in the freight accounting department until 1935, when he was appointed chief clerk, statistical bureau. On March 1, 1946, Mr. Tedford was appointed traveling freight accountant, which position he held until his recent appointment.

Hubert H. Sass, whose promotion to auditor of revenues of the Chesapeake & Ohio at Detroit, Mich., was reported in *Railway Age* of December 20, 1947, was born at Detroit on October 4, 1897. He entered railroad service in 1913 with the Pere Marquette (now part of the C. & O.), serving in



Hubert H. Sass

various clerical positions until 1919, at which time he began a short period of service with the Grand Trunk Western. Returning to the P. M. in 1920, Mr. Sass served successively as assis-

tant head clerk, head clerk and chief clerk. His next post was that of assistant auditor of revenues, which he held from 1945 to the date of his recent appointment.

C. B. Marshall, whose retirement as auditor of freight receipts of the Texas & Pacific at Dallas, Tex., was reported in *Railway Age* of January 31, joined the road in 1899 at the age of 17, as a mail clerk in the traffic department. He transferred to the accounting department as a revenue clerk in 1903, and advanced through successive positions to that of chief clerk to the auditor of freight receipts. Mr. Marshall had served as auditor of freight receipts since 1939.

Robert M. Clark, general claims attorney for the Atchison, Topeka & Santa Fe at Topeka, Kans., has been appointed general attorney and commerce counsel at Chicago. Mr. Clark is succeeded by **Charles L. Ewing**, the road's attorney for the state of California.

J. T. Williams, chief clerk—revenue, of the Missouri-Kansas-Texas of Texas, with headquarters at Dallas, Tex., has been appointed auditor of the road. **F. A. Schulz**, chief clerk—disbursements, has been appointed assistant auditor, with headquarters also at Dallas.

OPERATING

Robert J. Stone, whose promotion to assistant general manager of the St. Louis-San Francisco's Western district, with headquarters at Springfield, Mo.,



Robert J. Stone

was reported in *Railway Age* of January 17, was born on January 16, 1907, at Louisville, Ky., and received his higher education at Purdue University. He entered the service of the Southern in 1928 as a rodman and junior engineer at St. Louis, Mo., and in 1934 he became a student apprentice on the road's Birmingham (Ala.) division. He subsequently held positions successively as assistant to division engineer at Somerset, Ky., track supervisor at Dayton, Tenn., and Oakdale, assistant train-



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master at Somerset and trainmaster at Selma, Ala., Valdosta, Ga., Hattiesburg, Miss., and Birmingham. In February, 1946, Mr. Stone was promoted to assistant superintendent at Sheffield, Ala., and the following month was appointed superintendent at Selma. He joined the Frisco in February, 1947, serving successively as superintendent at Fort Scott, Kan., and Springfield. He was located at the latter point at the time of his recent promotion.

E. O. Daughtrey, whose promotion to division superintendent of the St. Louis-San Francisco, at Fort Smith, Ark., was reported in the *Railway Age* of January 17, was born on December 13, 1898, at Marion, Ky. He began his railroad career with the Frisco in 1912 as a messenger and clerk at Chaffee, Mo., advancing to telegraph operator in 1917 and train dispatcher in 1923. Mr. Daughtrey became trainmaster at Enid, Okla., in 1926, which post he held until 1934, when he was appointed assistant superintendent at Oklahoma City, Okla. He was serving in the latter capacity at the time of his recent appointment.

TRAFFIC

Oliver R. Anderson, whose promotion to general passenger agent of the Chicago, Milwaukee, St. Paul & Pacific, at Seattle, Wash., was reported in the *Railway Age* of January 17, was born at



Oliver R. Anderson

La Crosse, Wis., on April 3, 1903. He received his higher education at the State Teachers College at La Crosse, and entered railroad service with the Milwaukee as a station baggageman at his home town in 1920. Mr. Anderson subsequently served as ticket seller at La Crosse and St. Paul, Minn., city ticket agent at Minneapolis, Minn., and city passenger agent successively at St. Paul and Minneapolis. He became traveling passenger agent at St. Paul in 1935, and subsequently was advanced to general agent, passenger department, at that point. He was serving in the latter capacity at the time of his recent promotion.

E. L. Billingsley, assistant freight traffic manager of the Texas & Pacific at Dallas, Tex., will become freight traffic manager on March 1, succeeding **Carl Schonfelder, Jr.**, who will retire on that date after 55 years of service with the road. **C. H. Pistor**, general freight agent at Dallas, will become assistant freight traffic manager and **G. A. Ryser**, assistant to vice-president—traffic, will be appointed general freight agent. **Reid M. Rowan**, general agent at San Francisco, Cal., will be promoted to assistant traffic manager at that point, succeeding **A. T. Pratt**, who will retire on March 1.

R. H. Harding, division freight and passenger agent of the Chicago, Milwaukee, St. Paul & Pacific at Terre Haute, Ind., has been appointed assistant general freight agent at Milwaukee, Wis. Mr. Harding is succeeded by **F. W. Baker**, who has been transferred from Aberdeen, S. D. **George Neu**, traveling freight and passenger agent at Spokane, Wash., replaces Mr. Baker at Aberdeen.

"In recognition of the growing importance of export and import traffic," the Union Pacific has announced that, effective on March 1, its foreign freight department, with headquarters at Chicago, will be expanded to include offices in New York, San Francisco, Cal., Los Angeles and San Pedro. The department will be headed by **T. L. Vogel**, foreign freight agent at Chicago, who will become foreign freight traffic manager, with the same headquarters. **Frederick L. Morgan**, traveling freight and passenger agent at Pittsburgh, Pa., will become foreign freight agent at New York and **Frank L. Redfern**, traveling freight agent at St. Louis, Mo. will be appointed foreign freight agent at San Francisco. Foreign freight representatives will be appointed at Los Angeles and San Pedro in the near future, it was announced.

E. W. Martin, assistant general freight agent of the Atchison, Topeka & Santa Fe at Denver, Colo., has been appointed general freight agent of the road's coast lines at Los Angeles, Cal., succeeding **Frank G. Cole**, who has retired. Mr. Martin is succeeded at Denver by **R. M. Spahr**, assistant general freight agent at Los Angeles, who in turn is replaced by **H. K. McNamara**, division freight agent at Long Beach, Cal. Succeeding Mr. McNamara is **Edward G. Stubbs**, assistant division freight agent at Los Angeles. **Grady W. Covington**, division freight agent at Kansas City, Mo., has been transferred to Hutchinson, Kans., succeeding **H. F. Rupple**, resigned. Mr. Covington is succeeded by **C. F. Gleason**, city freight agent at Kansas City.

ENGINEERING and SIGNALING

Walter E. Heimerdinger, whose appointment as engineer of bridges of the Chicago, Rock Island & Pacific, at Chicago, was reported in *Railway Age* of January

31, was born on February 12, 1889, at Vulcan, Mich., and received his higher education at the University of Michigan. He began his railroad career in 1911 as an assistant on the engineer corps of the Rock Island, and subsequently served as building inspector and instrumentman. Mr. Heimerdinger was, successively, engineer on construction work, water and coal and assistant engineer, before entering military service during World War I as a lieutenant in the field artillery. He returned to the road in 1919 and held positions successively as assistant engineer, office engineer, resident engineer, roadmaster, division engineer, locating engineer, district maintenance engineer, division superintendent and acting assistant chief engineer. Mr. Heimerdinger was serving in the latter position at the time of his recent appointment.

John B. MacGregor, whose retirement as superintendent of railway telegraph service of the Grand Trunk Western at Battle Creek, Mich., was reported in *Railway Age* of January 31, was born on December 28, 1883, at Blue Island, Ill. He entered railroad service with the G.T.W. in 1902, advancing to telegraph inspector in 1913 and chief inspector in 1916. Mr. MacGregor was further promoted to supervisor of telegraph in 1918, and in 1921 he became assistant superintendent of telegraph. He had held the position of superintendent of railway telegraph service since February 1, 1924.

OBITUARY

Albert V. Tate, general claim agent of the Gulf, Colorado & Santa Fe (part of the Atchison, Topeka & Santa Fe) at Galveston, Tex., died on January 18, following a heart attack, while on company business in Omaha, Neb.



Photo by Leonard A. McLean
Weed killer service train (composed of a flatcar, 3 tank cars and a caboose) running at high speed along the Southern near Atlanta, Ga.



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Current Publications

BOOKS

Selected Papers and Addresses of Joseph B. Eastman, Director, Office of Defense Transportation, 1942-1944, edited by G. Lloyd Wilson. 381 pages. Published by the Simmons-Boardman Publishing Corporation, 30 Church St., New York 7. Price, \$4.

The papers selected for this volume trace the development of the Office of Defense Transportation and of the transportation system under the tensions of World War II and were presented before various transportation, business and eco-

nomic associations. The final paper is the one commonly referred to as Mr. Eastman's primer on administrative tribunals, and was his last and one of his greatest contributions to the literature of transportation regulation and administrative law. Included also are a biographical sketch of Mr. Eastman and an analysis of his career and character by J. Carver Fort.

By Rail to Victory—the Story of the L.N.E.R. in Wartime, by Norman Crump. 196 pages, illustrations. Published by the London & North Eastern Railway, 26 Pancras road, London, N.W. 1, England. Price, 7s. 6d.

Mr. Crump was given the freedom of

the line; he made scores of friends among railwaymen and, to quote him, "they are the real authors of this book." As a result of these visits he has written the war story of the London & North Eastern and of the men and women who kept it running. He tells of preparations for the war, operations during blackouts and bombings, handling of coal and munitions, war material made by the L.N.E.R., troop training and entraining, preparations for the invasion of Europe, the "V" bomb, and finally, victory. A list of the honors conferred upon the railway staff is included, as well as a map of the L.N.E.R. system.

Locomotive Cyclopedic of American Practice, 1947, edited by Roy V. Wright and staff. Thirteenth edition, 1418 pages, illustrations, drawings. Published by the Simmons-Boardman Publishing Corporation, 30 Church St., New York 7. Price \$8.

This, the thirteenth edition, contains the usual complete information on locomotive practices in this country. It includes definitions and typical illustrations of steam, turbine, electric and Diesel locomotives for railroad and industrial service; their parts and equipment; also locomotives built in America for operation in foreign countries. There is also included a section on locomotive shops and engine terminals.

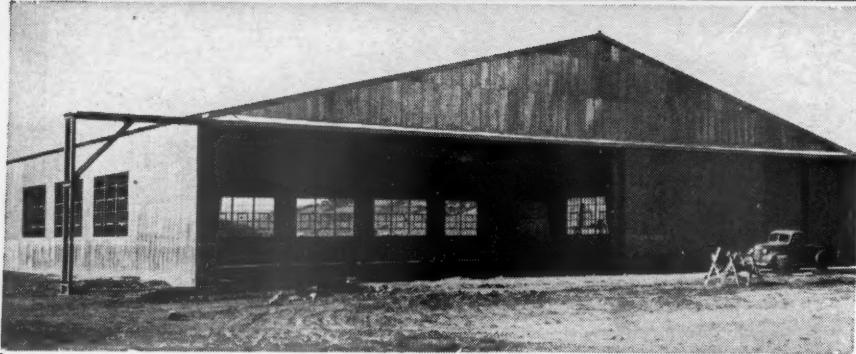
The Flow Directory of Material Handling Equipment Machinery and Accessories. 402 pages. Produced by the publishers of *Flow Magazine*, 1240 Ontario St., Cleveland 13, Ohio. Price, \$6.

The title page states that this is "The first comprehensive symposium of the diverse types of equipment, machinery and accessories being used in production lines, warehouses, packaging lines, yard handling and all the various places in which material handling equipment aids in the flow of American production." It is divided into five sections. Section 1 is the equipment reference guide and contains the names and illustrated descriptions of major types of material handling equipment, machinery and accessories; section 2 is a consolidation of manufacturers' catalogs; section 3 is the product classification index; section 4 is the trade names index; and section 5 covers engineering and technical data, including charts, graphs and data pertinent to solving material handling problems.

Proceedings of the 40th Annual Meeting of the Smoke Prevention Association of America. 120 pages, illustrations. Available from John Paul Taylor, 520 Pleasant st., St. Joseph, Mich. Price, \$2.50.

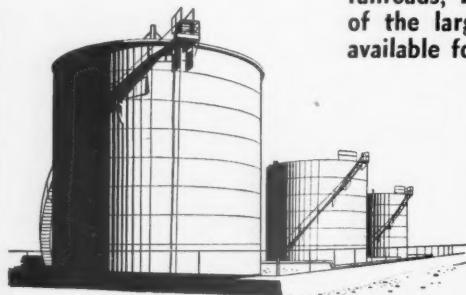
These proceedings cover the 1947 Conference of the Smoke Prevention Association. Among the papers of interest to railroad men are those on "Action Taken by the Pennsylvania Railroad to Eliminate Smoke," "Over-Fired Steam Jets Applied to Locomotives," "Induction Tubes for Smoke Elimination," "Dutch Ovens for Oil Burners," "Locomotive Fuel Performance" and "Combustion Air for Locomotives." City and state officials in charge of smoke regulation are listed in an appendix.

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Locomotives of the L. N. E. R., a Pictorial Record, by E. R. Wethersett and L. L. Asher. 122 pages, illustrations. Published by W. Heffer & Sons Ltd., Cambridge, England. Price, 7s 6d.

An attempt has been made in this book to present an illustration of every class of locomotive in service on the London & North Eastern. At the conclusion of the pictorial section there is a renumbering supplement, complete to January 14, 1947, by D. A. Dant. Both the old and new numbers of the locomotives are given.

TRADE PUBLICATIONS

The New Industrial West . . . a Report by U. S. Steel. 22 pages. Published by the United States Steel Corporation, 71 Broadway, New York 6.

This booklet is fundamentally a "progress report" on the stewardship of United States Steel since its purchase of the wartime steel plant at Geneva, Utah, from the government on June 19, 1946, and on industrial developments in the western states which have followed that purchase. It discusses United States Steel's past and present part in the remarkable industrial growth of the West.

Railroad Glassware. Bulletin RR-1, 16 pages, printed in color. Published by Corning Glass Works, Corning, N. Y.

This well-illustrated bulletin contains detailed descriptions and illustrations of Corning railroad glassware, such as signal lenses, roundels, prismatic reflectors, lantern globes, battery jars, lamp chimneys and locomotive lubricator and gage glasses.

PAMPHLETS

Transportation Facilities in Greece, by Serge G. Koushnareff, Seymour T. R. Abt, Elisha E. Early and Kenneth N. Hynes. 4 pages. Issued by the Office of International Trade, United States Department of Commerce. Available from the Government Printing Office, Washington 25, D. C. Price, five cents.

The railway section of this pamphlet contains brief paragraphs on prewar lines, postwar lines, equipment and traffic. Shipping, highways and commercial aviation are also discussed.

Fundamentals of Investment Banking; a Training Course Prepared for Members of the Investment Bankers Association of America, Edited by Robert W. Clark, Jr. Published by the Investment Bankers Association of America, 33 South Clark St., Chicago 3, Ill. Subscription rates may be obtained from the Education Department of the Association at the above address.

The 12 booklets in this series, which were prepared as a part of the training program approved by the 1944 and 1945 conventions of the association, comprise a discussion of fundamental topics, together with suggested reading assignments in standard textbooks. Of particular interest to railroad people is section 4 which is devoted to railroad securities and senior railroad bonds in a complicated debt structure, and part of section 6 which covers industrial and railroad reorganization.



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